FARMERS DIGEST

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The Farmer's Digest

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January is a good month to think about the new year . . . to consider how best to get the most from your land and labor in 1954.

It looks now like 1954 will be another fairly good year, but not quite so good as 1952 and 1953 for farmers in general. From now on—it appears—the real profits in farming will go to the men who do a good job of management.

For you and other progressive farmers, good management is largely a matter of good information . . . the kind of facts and figures you find in Farmer's Digest. That's why our editors make it their business to select the important articles from over 60 U.S. and foreign farm magazines and from other sources. We present them to you in concise, convenient form. In fact, we believe that, hour for hour, you gain more real information about farming from Farmer's Digest than from any other source.

Coming In February . . . Don't Miss These Important Articles

Below are a few of the carefully selected articles to appear in next month's issue of Farmer's Digest. If your subscription is expiring or if you are not now a regular subscriber, take a minute now to renew or enter your subscription. Farmer's Digest can make money and save money for you. Don't miss the valuable articles below:

How To Ease The Squeeze in '54
Thicker Stands Grow More Corn
Grass Is Your Best Crop
How To Keep Swine Thrifty
Christmas Trees—Coming Cash Crop
Truth About Dual Purpose Cattle
Net Energy, Real Value of a Feed
Dairy Herd Management and Profits
Farm Boys Should Go to College
Hybrid Hogs Are Proving Out
Creep Feeding Lambs
Pinfeathers Rob Your Profits
Vet's Notebook, No. 2
The Quarter Horse
Plan Now To Save on Taxes
Your Grain-To-Milk Ratio
New Approach to Mastitis
Right Way To Drain Land
Efficiency In Beef Production
200 Bushels Per Acre Corn

The Farmers Digest

Volume 17 January 1954 Number 7

A Vet's Notebook . . . No. 1

SIGNS OF GOOD HEALTH

First of a series of short, informative articles by an English Veterinarian, dealing with common diseases and other troubles in animal health. You are sure to find them interesting and valuable. . .

Condensed from Farmer & Stock-Breeder, London, England

HOW fast does the normal calf breathe? How many times does a cow chew the cud? What is the normal dung of a pig like? What colour should a horse's urine be? Such things as these indicate good health or bad. You must, in fact, be familiar with the normal day-to-day signs of health before it is possible to diagnose trouble.

The healthy animal appears contented. On rising the cow will invariably stretch. The general appearance of the healthy horse at rest is perhaps best described as completely unworried. At work he is keen, eyes bright and ears pricked. The healthy pig is alert, eyes shining, tail curled.

In the healthy animal appetite is always good and food is attacked with relish. Chewing, swallowing and digestion is carried on without effort or discomfort. In the cow and sheep, cudding is an invariable sign of health, and is one of the first things to disappear in the sick animals. Then again, in the horse and in cattle (with the ex-

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ception of the rough-coated breeds) the coat should be sleek and oily and easily moved over the ribs. In the case of the pig the skin should be cool but not cold.

Eyes Should be Bright

The eye affords a valuable diagnostic aid, particularly the membranes which can be seen when the lower lid is pulled down. In the healthy animal the eye is bright and intelligent and the membranes are pink in colour. In the diseased animal the eye is dull and the membranes vary in colour according to the type of disease from which the animal is suffering. For example, in jaundice they become yellow, and in acute inflammatory conditions such as enteritis or pneumonia, bright red.

Normal temperature of all animals varies within certain limits. For example, it tends to be higher in the young animal after food and after exercise. It is lower in cold weather, in older animals and at night. These are normal variations in temperature. The temperature of the farm animals is taken by inserting a clinical thermometer into the rectum. The best type of thermometer, I find, is that with a stubby bulb; they break less easily.

Normal temperature ranges in degrees fahrenheit:

Cow	101.5—103—average	102.5
Calf (6 months)	102.2—104—average	103
Sheep	102.2—104—average	103
Pig	101 —104—average	103
Horse	99.5—101.5—average	100.5

Watch the animal breathe, for respiratory rate—the number of complete in and out movements of the chest per minute—is another good guide. Normal rates are:

Cow	25-30
Sheep	10-20
Pig	10-20
Horse	8-16

Respiration is accelerated in pain and in febrile conditions such as pneumonia, but don't forget that hot weather and stuffy buildings will also cause the animal to pant a bit.

Urine should be passed without effort and should be clear.

Varies with Diet

The consistency of the faeces varies with the diet—for example, that of the cow turned out on fresh grass is bound to be loose for a few days until she is adjusted to the change. For the most part the faeces of all animals should be firm but not dry. They should be passed without pain or undue effort and should be free from blood, mucus, pus and large quantities of undigested food.

These are just some of the signs of the healthy animal.

Farm Outlook for 1954

Government economists make their annual forecast. . .

Condensed from The Agricultural Situation, Outlook Issue

Farm operators' realized net income—the difference between realized gross farm income and total production expenses—is estimated at $12.5 billion in 1953. This is a billion dollars or 7 percent lower than the revised estimate for 1952. Reduced expenses next year may not fully compensate for the expected decline in farmers' gross income. Consequently, net farm income in 1954 is not likely to equal this year's figure, but it will probably be fairly close.

Prices farmers receive for their products in 1954 are expected to average close to current levels. This is the consensus of economists in the Bureau of Agricultural Economics, after a careful analysis of business conditions, expected trends in employment and income and purchasing power, together with prospective supplies of agricultural products.

No marked change in the domestic demand for food and other agricultural products appears likely in 1954 as compared with the current year. Also, foreign takings of farm products, while sharply reduced in the 1952-53 marketing season from other recent years, are expected to continue at about present levels over the next year or so.

Supplies of most farm products are expected to continue large in 1954. Carryover stocks may increase further at the end of the current marketing year, but a large part will be held by the Government, under the price support programs.

Acreage restrictions will bring smaller wheat and cotton crops; and price supports for these and several other commodities will continue to cushion the impact of large supplies on farm prices. Price supports for wheat, corn, cotton, peanuts, some types of tobacco and rice will continue at 90 percent of parity for 1954 crops unless marketing quotas for individual crops are disapproved by growers.

Reprinted from The Agricultural Situation, Washington 25, D. C.

The support levels for oats, barley, rye, and grain sorghums will be continued at 85 percent of parity. But because of lower parity prices, support prices will be a little lower for each crop except rye, which will be the same. Price support for flaxseed will be at 70 percent of the mid-September parity price, compared with 80 percent of parity for the 1953 crop. Support levels for other commodities have not yet been announced.

Unless drought next year forces liquidation of herds, cattle prices may continue relatively stable, close to current levels. Current indications suggest that marketings of hogs in 1954 are not likely to be increased until the second half of the year. Price prospects for hogs are fairly favorable, at least through the first half of 1954.

Farmers' production costs were reduced slightly in 1953 and may decline further in 1954. Prices paid by farmers including interest, taxes, and wage rates held relatively stable in the first 9 months of 1953, but at levels about 3 percent below 1952. Most of the decline from last year was due to lower prices for feeder livestock and feed. Prices of these major items are not likely to change much from current reduced levels. Prices of fertilizer and other industrial products purchased by farmers have stabilized in recent months and probably will change very little in 1954. Price concessions, however, are likely to be more general than in 1953, especially for those commodities produced primarily for the farm market. Wage payments will continue high and interest charges and taxes are expected to be moderately higher.

During the past year the greater decline in prices received than in prices paid by farmers dropped the parity ratio to 91 in mid-October compared with 99 a year earlier and 113 in February 1951 when prices received were at a peak. This decline in the parity ratio means, of course, that farmers' prices received are relatively less favorable as compared with prices of goods and services which the farmer buys and is often referred to as the "cost-price squeeze." Prospective trends in prices received and paid by farmers in 1954 do not indicate that the price-cost position of agriculture will change much in the coming year.

Based on present information, demands from some segments of the economy may well be somewhat less next year than in 1953. But it should be clearly noted that such easing in the

economy as may develop in 1954 appears to be relatively small. Even with some decline in economic activity, consumer incomes available for spending in 1954 are not likely to be much different than in 1953. The prospective reduction in income taxes scheduled for next January will add appreciably to spendable income. Some further increase in wage rates is also likely in some industries and unemployment compensation would tend to limit the effect of reduced pay rolls if unemployment should develop. As a result, consumer buying in 1954 is expected to hold up well even though purchases of some consumer durable goods may decline somewhat from rates in the first half of 1953. Consumer demand for food should remain fairly close to that of 1953. However, with marketing charges continuing high, the farmer's share of the consumer's food dollar may continue near the present low level.

There is little indication of a further weakening in foreign demand for farm products in the current season. Supplies of dollar exchange will be up somewhat from 1952-53 and no major increase in foreign supplies is in prospect. But with increased price competition for some commodities and the withdrawal of the United Kingdom from the International Wheat Agreement, exports of farm products in the current year probably will be near the reduced levels of 1952-53.

Swine Flu Strikes Hard, Spreads Rapidly

Hogs catch flu just as easily as humans do. With swine, it's just a different germ. F. A. Hall, Purdue University extension veterinarian, warns swine producers to be on the alert for the dreaded disease.

Note the high fever, persistent cough and poor appetite in hogs hit by flu, he says. Added discomforts will be the jerky breathing, discharge from nose and stiffness in joints.

Hog flu strikes suddenly, and can travel rapidly through the entire herd, Hall cautions. Practically the only treatment is good care. Have good ventilation for affected hogs, but get them out of drafts and dust. Make sure they are bedded well, nests are kept dry, and there's plenty of fresh water.

Good nursing will prevent the further complication of pneumonia, a worse fate than just hog flu.

Purdue University

WE NEED TO—

RAISE MORE SHEEP

Conditions are favorable now and sheep go well with cattle in the South. . .

Condensed from The Mississippi Farmer

E. E. Grissom

SHEEP are good property where they can be handled right, but producers must be willing to spend time with them and give them needed management to make money.

There is increased interest in sheep in the south. Several conditions are favorable to sheep at this time. Prices received last spring for both lambs and wool were good. Many acres of land normally planted to cotton will likely be available for other enterprises under a control program. Sheep could help utilize this acreage. Sheep numbers have increased only slowly since the end of World War II. Ewe prices are reasonable when compared with choice lambs. A choice 85 pound lamb will more than pay for a yearling ewe. The quick turnover and the two crops, lambs and wool, from a flock of ewes in the spring when most farmers need cash, are factors favorable to sheep. The initial investment on a unit basis in a flock of sheep is smaller than for most other classes of livestock.

Sheep top the list when it comes to making efficient use of pasture. No other class of livestock is able to produce a prime product from grass alone. This factor especially is favorable to sheep because most of the land in the south is suited to the production of grass and other forage. Housing and other equipment needed for sheep is inexpensive.

Raise With Cattle

Most sheep producers in the

Reprinted by permission from The Mississippi Farmer, Jackson, Mississippi

south are also cattle producers. Special temporary pastures must be arranged for late fall, winter and spring use for sheep, while in the late spring, summer and fall, both the cattle and sheep will utilize the permanent pastures. Sheep are employed in the better managed operations at the rate of one ewe or less for each beef cow. In that way, the sheep are never crowded on the permanent pastures. When on the more restricted temporary pasture areas, the flock is rotated to get best forage utilization and to aid in the control of internal parasites.

Some argue that sheep are more profitable than cattle. Others think cattle pay better. The truth is, the two enterprises are not competitive. They supplement each other profitably on many farms. Both are good enterprises if they suit the individual farm.

The ewe flock, like the beef herd, needs room. Both are extensive operations. Sheep won't do well when crowded. That's one of the reasons, possibly, why sheep are not spreading more to the small farms. There is too little room for sheep usually unless there's room for cattle, too. It's a mistake, usually, to figure that 4 or 5 ewes may run on the pasture area required for a beef cow. It doesn't often work out that way. The better plan is to gauge the sheep operation by the cow herd, stocking about one ewe to each cow. This plan spreads out both the cows and the ewes and that is basic management for both sheep and cattle.

A farm, for example, that is capable of providing enough acreage for pasture and forage for 50 beef cows and 50 ewes would possibly make a better return than if the livestock resources were devoted exclusively to one or the other enterprise.

Small Population

Sheep numbers have failed to show the rate of increase that cattle have made in recent years. In fact, sheep numbers are far below previous figures. In 1942 the inventory showed 56,200,000 head, as compared with approximately 31,600,000 head today. During war time, most of the experienced help was inducted into the service or went over to industry and never returned to the farms and ranches. Cattle replaced sheep on many ranches because they require less labor. Materials for fencing were scarce during war time. Competition from other countries also has been strong. Substitutes for wool have been a factor. Stockpiles of government wool have depressed the wool market. Dogs and parasites always have to be contend-

ed with in the sheep business.

To those who want to add sheep, we suggest it is not advisable to buy ewes late in the year to breed. The best plan would be to buy lambs in the fall, grow them out as replacement ewes and breed the next summer.

Three Factors Influence Prices Of Cattle And Hogs

Today's shifting price relationship between hogs and cattle largely is caused by dietary habits and buying power of domestic consumers plus amount of the two kinds of meat offered for consumption, according to A. W. Willis, extension economist at the University of Wyoming.

Willis points out that 2 years ago, price of slaughter cattle per pound would average some 50 to 60 per cent higher than hogs. He says a USDA economist calculated that in 1951 it took eight hogs, 240 pounds each, to buy one 1100 pound steer. Now it takes only four such hogs to buy such a steer. Reason why bothers most everyone.

Since 1951, amount of money homemakers have had for buying food has changed little. Research on food buying habits shows homemakers spend a certain percentage for food and a rather constant percentage for meat. The meat dollar is again apportioned on rather permanent percentages between beef, pork, and other meats.

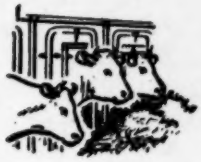
Willis says that if amount of beef on the retail market increases, price of beef per pound must be reduced or some will be left in the shops to spoil. A retailer is forced to lower beef prices in order to move his entire supply. Then, for the next week's sales, he orders less beef—if the price is to remain the same—or the usual or increased amount—if the jobber or packer will reduce the price to him. This price chain reaction soon reaches back to the Wyoming feeder cattle producer.

If the packer gets less for the beef carcass, he must buy live animals cheaper. If he offers less for live animals, a feeder must pay less for the cattle he is going to put in the feed lot to replace the ones he sold at the reduced price. According to Willis, the same principle is true regarding the price of pork except that over the past 2 years it has worked in the opposite direction.

University of Wyoming

WORLD'S RECORD DAIRY HERD

Cows are bred right, fed right and managed right. Don Morris tells you how. . .



Condensed from Successful Farming

Delmer Groves

LAST year, 29 cows at Don Morris' farm, Highland County, Ohio, averaged 638.6 pounds of butterfat and 16,149 pounds of milk. *This is a world's record*—no other herd has reached it. The herd average for the last 3 years—626,639, and 638 pounds of fat—is better than any other herd this size has ever had on twice-a-day milking.

These are records set by a plain-dirt farmer, under conditions that could be duplicated on almost any farm. But Don Morris is not just *an average cow milker.* He has the knack for getting the most from every cow. This is coupled with the ability of getting the most from every crop acre and making use of each ton of crop produced on the 189-acre farm.

There's no magic formula, no secrets for high milk production. *All* of the well-known improved practices are put to work—he farms "every bit as well as he knows how."

High records result because cows are bred right, fed right, and managed right. These are the three cornerstones of Morris' program. Here's how he does it:

No cow can produce without the breeding to support high production. All but 6 of the 80-some animals in the herd are homebred. And the herd has been upgraded from a 400-pound butterfat average a scant 10 years ago.

Each prospective sire is sampled while young, before he is used on the entire herd. Half a dozen young bulls are being

Reprinted by permission from Successful Farming, Des Moines, Iowa

tested right now at Don's farm. Some inbreeding is done, to test family lines, in the search for outstanding cow families. When such a family is found, it is intensified by line breeding.

Proof that Don is an apt student of breeding and Holstein bloodlines lies in the fact that two out of three major sires he has selected for home use have raised the production of daughters over dams by sizable amounts.

Half the daughters from one bull produced more, and half produced less than their dams' record. All but two daughters of a second bull made records better than their dams'. Six daughters of this bull have records ranging between 550 and 660 pounds of fat. But the third bull, Don-Mar Seven, was the one that really "nicked." This bull put an average increase of 186.7 pounds of butterfat on the daughters over the dams' records.

Another point followed in the breeding and selection program is persistency of production. Cows which give a lot of milk early in the lactation, but falter badly later, are culled. They are more prone to udder trouble, harder to feed, and are apt to have shorter productive lives.

The cornerstones of feeding and management are tied together closely. World records are not broken by hungry cows. Although knee-deep in meadow mixtures all summer, the cows at Don-Mar are offered both hay and silage the year round.

There's no seasonal slump in the Morris herd—thus good cows are able to *demonstrate their actual production ability.* Because of this, Don is able to cull closely, following accurate production records.

During the winter bunks are kept in the barnyard near the temporary silos. The sorgo silage is unloaded from the silos directly into the bunks. Corncobs bed the lot and at the same time hold the liquid manure. The cobs are hauled to the fields in the spring.

Pasturing starts early in the spring, on Balbo rye. This is followed by pasturing meadows and small grains. Then the cows go into rotated meadow pastures. A 60-acre field is divided into 10-acre lots, with temporary fence. After a few days on one lot, the cows go to the next, and the old one is clipped.

The mixture in most meadows is two-thirds alfalfa with the balance made up of Ladino and Kenland clovers, and timothy. Cows have the run of a small bluegrass area. In late fall, the

cows again pasture on Balbo rye.

It takes over 300 tons of silage to keep the 80-90 head of Holsteins filled. About 30 acres of cropland are plowed each year, half of which is planted to field corn. The other 15 acres goes to sorgo for silage. Morris likes sorgo because of the high yield per acre and its apparent drouth resistance. Also, its high sugar content seems to help preserve it in the three paper-lined, fencing-wire silos which are erected in the barnyard each year.

Early in spring, the 12x36-foot tower silo is filled with grass silage which is fed out during the summer. Don can refill this silo with sorgo late in the fall, because frost doesn't seem to hurt sorgo.

With the cows crammed so full of top-quality pasture, hay, and silage, it's a wonder they can eat any grain. The basic ration is fed to cows, heifers, and calves, and it averages only 11 per cent crude protein.

The basic ration is made up of 2,000 pounds of corn-and-cob meal, 300 pounds of beet pulp, and 300 pounds of 32 per cent protein supplement. Dry cows get bran and oats, plus some special feeds. Milking cows are fed "by eye" at a moderate rate. Special feeds – like bran – are hand-fed to meet the appetites of individual animals.

Up to six or eight weeks of age, calves are bucket-fed whole milk. They start on roughage early. By eight weeks, at the latest, they have been gradually changed to the basic grain ration, plus oats and molasses. Females are dehorned as calves.

At a little over a year, the heifers are doing without grain —receiving only hay, silage, and pasture. A few months ahead of freshening, they are placed with the dairy herd and learn to enter the milking section where they are fed grain.

You don't make 600-pound-herd averages unless the heifers milk well, too. Heifers come into milk at Don-Mar in good flesh, but they may well be under two years of age. They're bred for fall freshening, even if extremely young.

Don Morris says, "It's better to breed them young than to let them go around again and get too old. Also, I have less breeding troubles when heifers freshen young."

The Morris herd is made up of good, straight, rugged cows. They're not pampered—they are free to roam, with no stanchions or tie stalls. In the coldest weather you will find them outdoors, even though they have access to an L-shaped loafing pen

that runs along one side and end of the barn. They eat outdoors 12 months a year.

The old stanchion section is used for machine milking. This is where Morris becomes fussy—he milks at the same hour, night and morning, and these are at even intervals.

Don Morris markets the products of his farm through his Holstein herd. The whole farm is geared to them. That's why they are allowed to pasture off small grain. He nets more than if the small grain were custom-combined and fed or sold. Most of the farm is kept in forage crops, because his records prove this is the way to produce the most pounds of milk from his 189 acres.

Farm Fire Department

"This is our home fire department and we hope we never have to use it for anything more exciting than watering our lawn or cleaning out the barn floor," said Ray Miller of LaCrosse, Indiana. He referred to the small fire protection building that he and his father, Frank Miller, built and equipped. Its purpose is to supply protection for the buildings on the 400 acre farm the two operate in partnership.

The building is 6 feet deep and 6½ feet wide, 8 feet high in front and 5 in the rear. It is built of concrete blocks, five blocks high, and asbestos shingles above. The inside is insulated with asbestos.

A pump with a 5 horsepower motor is located over a well inside the building. If the wires burn and the motor fails, a tractor can be backed up to the rear to operate the pump. The interior is heated in winter and has a 30 gal. priming tank.

Inside, 200 feet of fire department size hose is kept coiled so that the end can be grabbed and the hose will unroll smoothly. The other end can be snapped onto the pump quickly. The hose is long enough to reach the farm home and to the far side of the nearby barn.

The nearest fire protection is the volunteer department in LaCrosse, three miles away. The farm hose has a coupling that can be hooked onto the fire engine and provide additional capacity. The Millers plan to lay pipe about the place, with hydrants to which the hose can be attached. This will increase the range of protection and use for other purposes.

Electricity on the Farm

A Farm Manager Writes To His Farmers—

The Do-Well Baby Beef Program For 1954

Rarely do you see so many facts and figures about any phase of farming as Jesse M. Dowell has included in this letter, originally sent only to operators of farms managed by the Do-Well Agricultural Service. If you have beef cows, don't fail to read it. . .

Jesse M. Dowell

Our program for 1954 is based on experience and on results of the many agricultural college tests which follow. Here is what to do each month of the coming year:

January 1. Beef cows and bull need no grain with hay. If you are feeding only grass-legume silage to cows, add only trace mineralized salt. This is according to Morrison's Feeds and Feeding.

2. Calves weaned in Nov. or Dec. from above cows. Feed all the oats they want, gradually changing to about 8 lb. of corn and cob meal and good legume hay, plus salt. If on corn silage add legume hay free choice and 1 lb. of supplement plus 2 to 3 pounds of oats or corn and cob meal. Follow with shoats. Bed well. Fresh air but no drafts.

February 1. Beef cows handled same as in January. Bed well. Remove bull and keep in barn lot, or with other livestock. and feed him a little grain, if needed to get in condition for breeding.

2. Calves to be handled the same as in January.

March 1. Cows same as January and February. New calves start coming. a. Castrate at 1 to 4 weeks of age, when they can be easily held down. Apply White Smear. Dehorn with caustic. b. Ear notch at at same time with your farm mark.

2. Yearling calves, continued as in February.

April 1. Turn cows and new calves out on pasture as soon as firm enough to prevent trampling. Preferably a pas-

Reprinted by permission from Jesse M. Dowell, Champaign, Illinois

ture of ⅓ legumes and ⅔ grasses that has received nitrogen top dressing, thus stimulating the grass growth, offering best help we know of to prevent bloat from legumes during the spring bloat season. This also increases carrying capacity. As remainder of new calves arrive, castrate and ear mark. Free access to water, salt, and shade.

2. **Sort out replacement heifers** from yearlings on feed and turn out with the cows. Bring rest of yearlings to full feed of corn gradually and turn on pasture and self feed or bunk feed. One acre should carry three.

May 1. Cows, calves and replacement heifers same as April.

2. **Yearlings** same as April. Full feed on pasture.

June 1. Cows, calves and replacement heifers same as April and May. Turn in bull June 1 to start calf crop March 10. A **good** bull is **one-half** the herd. An average or **poor** bull is **all** the herd. Spray for flies.

2. **Yearlings** same as April and May. Spray for flies.

July 1. Cows, calves, bred heifers, and bull, same as June. Spray for flies.

2. **Yearlings** same as April, May and June. Spray for flies.

August 1. Cows, calves, heifers, and bull as June and July. Spray for flies.

2. **Dry lot yearlings** for a 30 day full feed finish. This summer we split a batch of cattle and the lot on full feed on dry lot for 29 days received a bid of $1.00 per cwt. more than the one-half left on a dried up bluegrass pasture. That $10.00 a head can easily increase net profit one-fourth. Spray for flies.

September 1. Cows, etc. as June, July and August. If some are to calf late, sell and replace with good bred heifers for early spring calves.

2. Ship corn fat Baby Beeves as they reach 900-1000 lbs. and grade Choice. Lower prices are expected by Oct. 1st almost every year.

October 1. Run cows, calves, bred heifers and bull in corn fields to pick up corn after picking. Leave until ground becomes soft after a rain. Don't pasture off all stalks. Plow down with nitrogen for humus.

November 1. Cows as in October, then hay as in January, if pastures are gone.

2. **Wean calves** from cows after killing frost. Vaccinate heifers for Bangs that are to be added to cow herd. Start

weaned calves on best legume hay and what oats they want. Gradually replace oats with 8 lbs. corn and cob meal. If you have corn silage, full feed it and add legume hay free choice plus 1 lb. supplement and 2-3 lbs. corn. If no legume hay, feed 1½ lb. supplement with corn silage and 2-3 lbs. of corn.

December 1. Cows as January unless still have firm stalk ground.

2. Yearlings on one-half feed same as in November.

AGRICULTURAL COLLEGE TEST REPORTS

(1) Russell of Illinois reports that full feeding in dry lot is the quickest method of fattening cattle, but use of **pastures offers** more opportunity for **cheaper gains** and **greater profits.** He offers the following wintering rations for calves and yearlings that make good use of pasture: 1. Feed 20 to 25 pounds of corn silage, 2 to 3 lbs. of legume hay, 1 pound of high-protein supplement, and 1/10 pound of feeding limestone per head daily. 2. Full-feed corn silage, feed 1 pound of high-protein supplement, and give a simple mineral mixture free-choice. 3. Full-feed legume-grass silage, plus grain equivalent to 4 pounds of shelled corn (which would be 5 pounds of corn and cob meal). 4. Full-feed legume hay, plus grain equivalent to 4 pounds of shelled corn (which would be 5 pounds of corn and cob meal). These rations will produce wintering gains of 1¼ pounds per head per day.

(2) **Early calves** are old enough to use the **increased milk** flow due to spring pasture and utilize pasture themselves, are **bigger** in the fall, but require more care at calving time. **Late calves** need less **attention** and have less difficulty in calving according to McCraine, Bray, and Francioni at the Louisiana Station.

(3) Clemson, South Carolina Station, says creep fed calves gained 70 lbs. extra on 494 lbs. of feed making gains cost 20c lb. Oats might lower this cost. Morrison's Feeds and Feeding points out that creep feeding does not pay except when pastures are scanty.

(4) Neumann of Ill. says dehorn new calves with caustic. Feed replacement heifers some grain, as weaned calves, to increase size. For Baby Beeves, may be best to save milk fat of calf by creep feeding or graining them after weaning.

(5) **Horned cattle** need **more**

room, make less rapid gains, and sell lower due to damaged hides and carcasses according to Williams, Stanley, and Smith in Arizona Bulletin 110. Winter Cows as cheaply as possible on roughage alone, if legumes make up 1/4 which will give them 5-6 pounds per head daily of the total 18-25 lbs. roughage consumed. If less legume than 1/4 add 1 lb. of protein. Grain is not needed. With at least 5-6 pounds legume hay per head daily there will be no shortage of protein, calcium, or vitamins. The rest of the roughage can be grass hay, corn stalks, stover, straw, etc. It is even satisfactory to winter bred cows on straight straw or dry grass range and 1 pound of protein supplement, according to Vinke and Dickson in Montana Bulletin 275.

(6) Morrison's "Feed and Feeding" reports "Baby Beeves" need to be well bred to develop into high-grade fat cattle at an early age, also fed liberally on grain. Otherwise, they will merely grow instead of fattening.

(7) Rusk and Snapp of Illinois report that to get calves fat sooner they should receive a limited amount of grain during the winter 3 to 5 pounds per head daily of corn or 4 to 7 pounds of corn and cob meal in addition to good roughage and 1 pound of protein if the roughage does not contain 1/2 legume. Then finish by full feeding 75 to 120 days on pasture. Morrison states there is little or no advantage in making decided ration changes previous to shipment.

(8) With corn silage, cattle will eat only 2 to 4 pounds of good legume hay. With calves in 8 experiments (Branaman of Michigan State) on corn silage, 1.5 pounds of supplement increased gains from 2.01 to 2.29 daily and selling price 42 cents per 100 pounds. Thus 100 pounds of supplement and 2 to 4 lbs. hay costing $4.50 replaced $6.90 worth of corn.

(9) Care should always be taken in changing cattle from dry lot to pasture especially when they are in good flesh or else they may not continue to gain or may even shrink severely. Severe scouring may result. This is from a mimeo report by Culbertson and Hammond of Iowa State.

(10) Self-feeding requires less labor, makes more rapid gains and results in a higher selling price because of a better finish according to Taylor, Willham, and Hawkins in Oklahoma. Rusk and Snapp in Illinois Report 1931 say that it doesn't pay to grind corn for cattle fol-

lowed by hogs. (However, most farmers do not keep paved lots clean so hogs recover all corn.)

(11) In feeding out cattle, Morrison in "Feeds and Feeding" states that it takes no more grain to feed out good animals than to feed out poor ones.

(12) Advantages of pasture fattening according to Morrison's "Feeds and Feeding" are (1) Cheaper gains. (2) Less labor required. (3) Manure distribution and (4) No shelter required.

(13) Disadvantages of pasture fattening are (1) That even though well fattened, cattle marketed directly off pasture may sell for appreciably less per cwt. than dry lot cattle of equal finish. (2) Farmer has less time to care for fattening cattle in summer than in winter. (3) In extremely hot weather cattle may not make good gains because of heat and flies. (4) When grazing a permanent pasture, the manure does not benefit the rotation crop fields. it may be difficult to provide water and shade.

(14) Grimes of the Alabama Station in Bulletin 361 reports that in most of the recent experiments, it has usually paid to feed some concentrates to cattle being fattened on pasture or else to finish them in dry lot on full feed.

(15) Mumford of Illinois in Bulletin 90 reports that supplement is not needed with corn and pasture. As immature grass is rich in protein, corn and good pasture make a balanced ration for fattening cattle, even calves.

(16) Four sprayings for flies during the summer will cost approximately 25c (for DDT) and increase cattle gain 15-30 pounds.

(17) Cattle full-fed on pasture dress out as high as dry-lot cattle but tend to shrink a little more on shipment to market report Bull, Rusk, and Snapp in Ill. Bul. 475. Cattle fattened on pasture alone, without grain, do yield carcasses of lower quality, less well fattened and dress less. They normally sell for much less per 100 pounds especially when cattle numbers are high and weigh less per head. Dry lot feeding all the way, spring and summer, increases the feed cost per 100 lb. gain as well as the labor requirement.

(18) It always pays to pave cattle feed lots increasing gains and saving manure, according to Pew, Evvard, and Dunn of Iowa State and Mumford of the University of Illinois. The dry lot finishing period is justified by cheaper gains due to less exercise. Shade should always be supplied, even on pasture, according to Good of the Univer-

sity of Kentucky. However, open south front sheds are best for cattle according to Watters of Missouri.

(19) Morrison's "Feeds and Feeding" points out that dry lot finished cattle sell better than pasture fattened cattle usually $1 to $3 more per hundred. (This year we found an easy $1 a hundred or $10 a head more profit by actually dividing the baby beeves on the Harris Home Farm.)

(20) Hogs will pick up 1 1/4 lb. of grain each day otherwise wasted by each yearling steer on full feed according to Case and Myers of Illinois. Follow them with shoat per steer if the cattle are receiving corn and cob meal and 2 shoats per steer if the cattle are receiving shelled corn. Feed the shoats 1/5 pound of protein supplement each day. Nothing fancy required as the shoats will get B12 in the cattle manure. Heady and Catron of Iowa State have found just recently that hogs over 100 lbs. need much less supplement than previously recommended.

Summary

Baby beef production is a good supplementary enterprise for grain farms. Corn can be acquired at its source at a minimum wholesale price without transportation expense. Roughages also are present on most farms and again put into cattle at an at-home wholesale price. Thus a ton of home produced corn and roughage can be marketed in a condensed form of 300 pounds of beef and thereby have only a fraction of the grain transportation expense. The terminal market, Chicago, sets the price on most of our products—particularly livestock and grain.

Also, as a conservative average, ½ to ¾ of the fertility removed from a farm in the grain can be returned to the fields in the form of manure reducing chemical fertilizer needs for maintenance and again make a saving of the expense for transportation. Livestock production in general, and particularly baby beef and pork production (shoats following cattle on feed) can also be supplementary in the use of labor. With larger and more efficient and expensive machinery developed in the past 4 years, it requires less, but more skilled labor which demands year around employment.

Livestock offers the good stock man an opportunity to turn legumes into dollars by combining them with what grain production the government is going to try to force you to cut down to (corn probably 20% down in 1954, etc.)

That's what should be done with more grain anyhow. Encourage feeding all we can produce, that is not needed for food and industry, rather that than trying to save it in government cans. Boil down **1000 lbs. of** corn or the equivalent into **150 lbs. of beef or 200 lbs. of pork** Then distribute, by trading, our surpluses, while millions of foreigners are short of meat, suffering from malnutrition, and even starving, **does not** make sense for a **long-run** farm production program. Grains are probably supported at a price, relatively speaking, that is too high in comparison with a so-called corresponding livestock price equivalent. With bigger machines necessitating bigger farms and fields, production costs per bushel of corn have been reduced far more than nutritional advancements have reduced the production costs of a pound of meat. Bigger machines mean less labor requirements and is a saving not only to the operator but to the owner in less investment in housing and buildings. Small farms can't afford the depreciation on these large efficient tools.

Economics Of Baby Beef Production

(A) Weaned Calf Cost:

Cost if purchased (present market) at 470 lbs. @ $17.57	$82.60
Cost if raised on farm to 470 lbs. @ $14.57*	68.50
Saving on home-raised calf	$14.10

*Home raised calf cost based on these figures: Pasture for cow, $22.50. Hay for cow, $36.00. Interest, insurance, etc. $10.00. We figure that cow fertilizing fields as she grazes off-sets labor, veterinary cost and calf loss.

(B) **Wintering Calf and Pasture Feeding**

Cost of weaned calf if purchased 470 lb. @ $17.57	$82.60
Hay—1 Ton	24.00
Corn and cob meal Dec., Jan., Feb., March 16 bu. @ $1.50	24.00
Straw—1/2 Ton (@ 15.00 Ton)	7.50
Corn Apr., May, June, July 22.3 bu. @ $1.50	33.45
Interest, insurance 9 months	6.00
Pasture (3 per acre) 4 months each	10.00

Cost Aug. 1, (890 lb. weight plus grade good)	$187.55
Cost Per 100 lb.	21.07
Value 890 lbs. @ 23c lb.	204.70
Profit from wintering and pasture	$ 17.15

(C) **Thirty Day Dry Lot (August) Feeding**

"GOOD" grade yearling 890 lb. @ 23c	$204.70
30 day feed-corn 8 bu. @ $1.50	12.00
Protein supplement 30 pounds	1.35
Hay—150 pounds	1.80
Interest, insurance, 1 month	1.50
Total Cost	$221.35
Average selling price "choice" grade received by us on farms we managed in 1953 $25.10 (950 lb.):	$238.45
Net Profit per head (30 day dry lot feed)	$ 17.10

TOTAL NET PROFIT PER HEAD—

Profit Raising weaned calf vs. buying	$14.10
Profit weaned to Aug. 1 vs. buying	17.21
Profit 30 days dry lot before shipping	17.10
Total Profit per calf raised	$48.41

(This is a lenient set of figures as Morrison in his 21st Edition of "Feeds and Feeding" on page 840 states that it is commonly assumed and has been shown by cost studies that when cattle are full-fed corn the by-products of the fattening operation (manure and pork) will usually pay all costs other than the initial costs of the cattle and cost of the feed.)

Electric Fence Tragedies—Homemade electric fence devices are death traps. Small children are involved in over half the electric fence tragedies. Few people realize that even a very small current can cause death. The current used by a small 7 or 10 watt bulb is enough to electrocute a person. Victims "freeze" to the conductor and they cannot release themselves unless the current is shut off.

Modern Feeds Make Hogs Gain Faster

Results of Minnesota tests show value of new rations and antibiotics. In fact, hogs "starved" in 1910. . .

Condensed from The Farmer

HOG feeds weren't half as good in the "good old days."

Today's rations can put weight on market pigs for less than half the feed per pound of gain than rations of 40 years ago.

Hog feed, 1953 style, produces more uniform market pigs regardless of breed, and when fortified with antibiotics actually helps control some costly hog diseases.

That's the story of progress in hog-feeding methods being told in demonstrations by Dr. Lester Hanson, University of Minnesota animal husbandry professor.

Dr. Hanson set up a feeding demonstration to let the pigs show the progress made in hog rations. He used pigs from three different breeds and two different crosses.. Each lot was made up of three pigs from each of five different sets of littermates. Treatment of the lots was the same except that one pig from each litter is fed a 1910 ration, another gets a 1930 ration, and the other gets the 1953 ration. The only deviation from rations commonly used in 1910 and 1930 was the addition of Vitamin A and D which were not used for hogs then. Hanson did it to prevent rickets and Vitamin A deficiency from affecting the results. Some of the test pigs didn't get sunshine.

Purebreds on the 1953 ration weighed an average of 200 pounds at 141 days old. From weaning to 125 pounds they used only 297 pounds of feed per 100 pounds of gain, and gained 1.70 pounds daily. Purebreds fed 1930 style averaged 130 pounds at 141 days, used 364 pounds of feed per 100

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pounds of gain, put on at the rate of .96 of a pound per day. On August 18, purebreds on 1910 rations averaged only 105 pounds at 141 days, and were gaining only .65 of a pound per day. Hanson couldn't figure their feed efficiency until they reached 125 pounds, but he estimated it would be between 600 and 700 pounds of feed per 100 pounds of gain.

The feeding test with purebreds began when they were weaned. Test pigs were selected for uniformity and weighed an average of slightly more than 51 pounds at 59 days. Crossbreds were 31 days older and 30 pounds heavier than the purebreds when put on test.

Crossbreds used in the feeding demonstration show the value of good rations for young pigs. The demonstration crossbreds went on trial at an average weight of 81 pounds. Before the test they had been raised on a complete 1953 style feed which included B-12 and other vitamins, efficient levels of protein, antibiotics, and minerals.

With this good start, crossbreds maintained a daily gain of .86 of a pound on the 1910 ration, 1.78 pounds on the 1930 feed, and 1.92 pounds on the 1953 feed. Feed efficiency of the crossbreds remained fairly even on 1930 and 1953 rations, but fell off on the 1910 feed. From 81 to 125 pounds crossbreds on 1953 rations had used 339 pounds of feed per 100 pounds of gain. Those on 1930 rations needed 340 pounds of feed per 100 pounds of gain. But crossbreds on the 1910 rations had used 634 pounds of feed per 100 pounds of gain. The crossbred pigs on 1930 rations are nearly keeping up with those on 1953 rations because of the extra 30 days on modern rations before the test began, Hanson believes.

The rations differ mainly in amount and quality of protein, and Vitamin B-complex content. The 1910 ration was simply ground corn, complete mineral including salt, and water. The protein level was that of corn, estimated by Hanson to be 8½%. The 1930 ration was the same as 1910 except for addition of tankage to provide a protein level of 14% until pigs reached 125 pounds. After 125 pounds, the protein level of 1930 ration was dropped to 11%. The 1953 ration is corn plus soybean oil meal, linseed meal, alfalfa, and tankage as sources of protein, steamed bonemeal, Vitamin B-12, B-complex supplement, trace-mineralized salt, and antibiotics. Protein level of the 1953 ration was 14% for pigs to 125 pounds,

11% for pigs from 125 to market weights. Each ton of the 1953 ration contained 10 milligrams of Vitamin B-12 and 10 grams of antibiotics.

* * *

A new milk container—now being manufactured in Sweden—could mean a saving of one cent a quart to U.S. consumers. Its shape requires 55 to 85 percent less paper than conventional containers. It has four equal triangles, one of which can be the base.

* * *

All three rations were self-fed as a complete ground mixture. The 1910 feed contained 97 pounds of corn per 100 pounds of feed, the 1930 ration contained 88 pounds of corn per 100 pounds of feed until pigs reached 125 pounds, and 93.5 pounds of corn per 100 pounds of feed from 125 pounds to market weight. One hundred pounds of the 1953 ration had 80 pounds of corn until pigs weighed 125 pounds and 88.5 pounds of corn from 125 pounds to market weight.

The supplement for pigs on the 1953 ration is basically the Minnesota supplement for hogs, mixed to be fed with corn for pigs not on pasture.

Hanson has used 1,000 pigs in three years to study the value of of antibiotics in hog feed. The results show that continued use of antibiotics is controlling necro so well that these intestinal infections are a greatly reduced problem in the University herd today. In the last three years, University Farm hogs have become so healthy that pigs from weaning to 200 pounds do not respond as they did two years ago to antibiotics in their feed either on pasture or in dry lot.

In University Farm tests, the feed requirements per pound of gain for better-quality pigs was the same in 1951, 1952, and in 1953 with or without antibiotics. In the 1951 pasture experiments, an antibiotic reduced feed requirement 6.5%, but in 1952 and so far into 1953, the same antibiotic had no effect on feed efficiency of pigs on pasture.

"Some of these results are so close that it looks like we had juggled the figures," Hanson said.

The check of 1,000 hogs also shows that suckling pigs or those fed sow's milk substitutes need the protection of antibiotics in pig starter or in the substitute milk. Suckling-age pigs at University Farm are still responding to antibiotics in started or milk substitutes, but due to the benefit of continued antibiotic feeding the response is not as great now as it was when the trials began.

Some Good Advice On How To—and Whether To—Work on Your

OLD TRACTORS

Condensed from The Mississippi Farmer

Melvin J. Timm

IF YOU are one of those people who always read the "what to do" or "it is time to" columns in farm papers, you may possibly have read about the Nebraska retests on two and three-year-old tractors.

In some columns the advice was given without any instructions, to remove the head of your tractor and scrape off the carbon. This, if tests are reliable, should restore much of the lost power. It sounds quite simple—but it isn't.

He Who Knows Not

Unless you are equipped with a torque wrench, a manual, a soft wire brush and some experience, it will cost you less to take the tractor into the dealer's shop and have him check your valves, valve guides, and cylinder wear at the same time. If you insist on doing the job by yourself, read the manual on engine overhauling first. Follow the sequence with reference to removing and in reassembling the securing of the studs that hold the head in place. If a manual is not available, the general rule is to begin loosening the studs around the outer edges of the head, working toward the center. Barely crack the set the first round, then back off a half turn per stud next round. Repeat the half turn procedure, following the sequence until the wrench can be moved without effort.

The reassembly is done in reverse, beginning at the center of the block. Using a torque wrench set the studs up snugly to ten pounds torque. Then repeat at ten pound intervals. Be sure to make liberal use of a good graphited penetrating oil. Most tractor heads are cast iron and most manuals call for a final figure near 65 foot pounds.

New Rings?

The manuals will tell you what to look for when the head

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is off and how to proceed with the cleaning. An experienced mechanic can tell at a glance whether or not your engine is consuming oil by burning. He can tell whether poor rings or loose intake guides are the culprits. All too often the home mechanic spends twenty or twenty-five dollars on new rings and gaskets only to discover that rings were not the answer.

Ridge at Top of Stroke

Sometimes the rings are still capable of doing a good job, but a slight ridge has formed at the top of the stroke. When the engine gets hot the top ring touches the ridge and is temporarily twisted. The first gasses pass it by and enter the crankcase. There they help to build up annoying sludge and crankcase pressure that forces the oil out. In an L head motor the oil often goes up through the intake valve guides and is burned.

Your tractor mechanic will ream out this ridge and in the course of a year's service save you every cent the cleaning job will cost you when performed by a reputable serviceman.

Rid of Dirt, Gum, Carbon

There are several things that you can safely do by yourself and save money. A new set of spark plugs selected for the proper heat range (consult your operator's manual) and correctly gapped, can often mean the difference between using low or some intermediate gear box setting. Cleaning off the dirt that accumulates on the outside of the engine is more than esthetic in value, especially in hot weather. Solutions for cleaning the carburetor are now available in kit form. The fitting on the can is attached in place of the gas line to the carburetor and a pint can of the solution is consumed as the engine runs normally. By means of this simple operation gum is removed and some of the carbon in the engine is also disposed of.

Save Dollars

Keeping a clean cartridge in the oil filter, and periodically emptying the sediment bowl in the fuel line will save you many dollars in maintenance. Flushing out the radiator with one of the better products on the market for the purpose is but one step. The use of a rust inhibitor completes the job.

Some manufacturers have kits on the market that contain a neon timing light, a compression tester, a vacuum gauge, and a voltmeter. Following the directions included in the kit, the owner can check the timing of his tractor (or family car), the condition of its cylinders, its ignition and electrical efficiency, and set the carburetor.

Periodic maintenance pays. The important thing is to know your own limitations. Attempting repair jobs for which you are unequipped both in proper tools and sufficient experience can only cost you money in the long run. Conversely, neglect can cost you now. Recent Nebraska tests indicated an average loss of 13% in rated horsepower in two and three-year-old tractors, most of which had received just average maintenance. Another recent survey found that horsepower was being expanded in too heavy oils, and gear greases; fan belts either too loose or too tight; overinflated tires; misadjusted governor linkages; and just plain girt and dirt. In many cases the field men making the survey called attention to the instructions in the manuals and got in reply an amazing number of wrong theories in opposition to the instructions. Most of the theories had been picked up from what was supposed to be the experiences of some other operator. You can spare your self a lot of headaches if you will just remember that the engineers who designed and built our power equipment have a fair idea of what to put into it.

Good Layers Make Profit

Two thousand good laying hens laying 215 eggs per bird per year will earn more profit for you than 4,000 hens laying only 180 eggs per bird per year, says Ralph Van Sant, Arizona poultry specialist.

Figuring eggs worth 50 cents a dozen and feed costs at $100 per ton with other expenses as 40 percent of total costs, here's what you come out with. Two thousand hens averaging 215 eggs will supply 430,000 eggs or 35,833 dozen per year. Feed requirements per bird will amount to 92 pounds per bird or 92 tons for the flock. With total costs coming to $15,333.34 and total income at $17,916.50, the profit from the 2,000 high producing hens will be $2,583.16.

Four thousand hens averaging 180 eggs per year will lay 60,000 dozen eggs. This will amount to $30,000. These birds will eat 174 tons of feed averaging 87 pounds per bird per year. Total costs will come to $29,000. The profit will only be $1,000.

Poultrymen don't have to reduce the size of their flocks, but they can get increased profits by increasing the production per bird.

Arizona Extension

FARMLAND LETDOWN

Prices move down on agricultural real estate in many areas. Brokers differ on what will happen in '54. . .

Condensed from The Wall Street Journal

D. K. Webster and Allen Van Cranebrock

THE "For Sale" sign is sprouting on more and more of the nation's farm lands these days. And a dearth of buyer interest is forcing many slashes in owners' asking prices.

That's the general picture that emerges from talks with farm brokers gathered from all over the country for the National Association of Real Estate Boards' annual convention here this week.

Possible gleam in the gloom: Most of the brokers foresee an upturn in farm land values early next year—a hope that gets little encouragement, however, from the Agriculture Department. The department's latest prognostication is that "a further decline is expected in 1954."

Drought and Prices

With some notable exceptions, the rural realtors report that declining prices on a wide range of farm products, coupled with the severe drought in the Southwest, have resulted in increased offerings of farm acreage, and selling prices substantially below a year and two years ago.

For instance, Lloyd L. Loveland of Oscar Main Associates, Indio, Calif., says alfalfa land in the Coachella and Imperial valleys has dropped about $100 an acre in the past three years, as the alfalfa price per ton has fallen to $24 from $45. He cites the extreme case of one alfalfa farmer who turned down an offer of $650 an acre six months ago, now wants $500, and is "still $100 above the market."

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B. E. Grantham of Jackson, Miss., declares the slide in the price of cattle has led to a sharp increase in acreage for sale in his territory. He figures 70% more farms are available in Mississippi now than last year. In June one farm was offered for $94,000; Mr. Grantham sold it last month for $86,000. The overall drop in Mississippi farm values since last year he estimates at "more than 10%."

"We've had more dairy farms on the market in the past year than at any time in the last 12 years," says J. Earl Miller of Geneva, Ohio, near Cleveland. Farm land prices in his area are now about 15% below 1951. A 240-acre dairy farm that changed hands for $80,000 in 1949 sold this year for $64,000. "Farmers in the dairy business have a feeling of uncertainty and a lack of security," he says.

Fall in Midwest

Cattle land prices have slipped as much as 40% to 50% in the drought area of the Midwest and Southwest, according to W. D. Davis of Appraisal Associates, Kansas City, Mo. His firm engages in farm valuations, management and sales, principally to investors.

Such drops are among the steepest that have occurred, of course. The latest Government report on farm land value shows a 4% decrease between July, 1952, and July, 1953, with "indication . . . in early October that the downward trend in land values has continued since July." But there are a number of sections around the country where values are holding firm or even rising.

And most of the brokers interviewed—even those from areas where prices have fallen hard—profess to see grounds for optimism about the future. Owen W. Sherrill of Georgetown, Texas, outgoing president of the National Institute of Farm Brokers, predicts land prices will be on "a definite upward rebound" by next spring.

Arthur E. Biard, San Antonio farm broker, supplies one argument: Cattle prices should rise next year, owing to the fact beef is expected to be scarcer following the heavy marketings of recent months. Then, too, he believes the long drought in the Southwest is showing signs of having run its course.

"The future looks very good," says Otto Knudsen, a native Brooklynite who deals in farms around Eagle Grove, Iowa.

Exceptions to Today's Trend

In the rich Midwestern grain belts, Government price props have kept croplands profitable, and Mr. Knudsen declares land values are strengthening in his

area. "Choice farms are as high, and as hard to list, as ever," he avers.

Mr. Davis, of Kansas City, agrees that there's still a ready market for the best lands. "For a top-notch ranch, you'll still pay what you'd have paid three years ago." he says.

Special local situations have also firmed up land values in some areas. For example, Charles J. Happ, of Boylestown, Pa., says, "If anything, prices have risen in Eastern Pennsylvania." He explains that Bucks County housing developments have cut into the area's farmland and created a greater demand for the remaining available acreage. Too, he notes that farms there are highly diversified in produce, poultry and dairy products, and they also have a competitive edge in their proximity to the large Eastern markets.

While San Antonio's Mr. Biard reports ranches selling for $50 an acre a year ago are down to $35 to $40, U. S. Lawrence, a realtor in Southeast Texas—where the drought wasn't as devastating—claims land values are moving upward. The newly completed Galveston road and other highway improvements around Houston have skyrocketed land prices from around $100 an acre two years ago to as much as $1,200, he says.

No More Gravy-Train Ride

However, the total picture remains one of increasing offerings, fewer bids and falling prices. Mr. Sherrill sums it up this way: "The gravy-train ride of the sellers' market has passed to a buyers' market, and the water is being squeezed out of the seller's asking price."

Says C. A. Bresnahan of Western Realty Co. in Denver: "In order to sell range land today, you have to price it at 50% of what it would have brought 18 months or two years ago. Two years ago we begged these ranchers to sell and they laughed at us. Now they're all in our offices but we can't sell the ranches."

He tells of a 10,000-acre ranch in Western Colorado that was purchased for $250,000 a year ago and sold for $125,000 two months ago because the owner couldn't pay off a bank loan.

The reasons behind this trend aren't hard to find. Choice steers, which sold in Chicago's stockyards at 40 cents a pound in the spring of 1951, dipped to 22 cents last July and are now hovering around 26½ cents.

Cotton Land Outlook

In contrast, cotton farmers in Mr. Grantham's Mississippi area are doing well. "They're in a bullish mood, with money in their pockets," he states. But

here in California, cotton growers are worried over the impact of Government acreage controls next year. While the older growing areas in the South won't lose much, the base period for calculating allotments will hit growers in sections that have become big cotton producers more recently.

Mr. Loveland thinks acreage controls will reduce cotton land by about 78% in California's San Joaquin Valley. In addition, 85,000 acres in the Imperial Valley and 12,000 in the Coachella Valley have been planted in cotton since the Korean War broke out and thus won't qualify under the acreage quota. This land may soon be selling at markdown prices, he predicts.

Some farm brokers claim they aren't particularly unhappy over the farm land price decline. They say the current hard times in the cattle business, for instance, are having a healthy effect in eliminating many of the amateurs, the marginal operators and the "Johnny-come-latelies."

"We've washed out the butcher, the baker and the candlestick-maker – the station-wagon farmer is now out of business," says Kansas City's Mr. Davis. This bodes well for a recovery and stabilization in livestock prices, realtors believe.

Well-Heeled Buyers?

Some also figure the bargains currently available in some types of farm acreage will attract a good many buyers in a position to ride out the storm in anticipation of better product prices. Some brokers, like J. H. Fotheringham of Vista, Calif., and Lorne A. Griffin of St. Charles, Ill., report a pickup in buyer inquiries just in the past month or so.

Due to the present tax laws, argues Mr. Davis, a professional investor in a high income-tax bracket can take advantage of the capital-gains provision to turn in a nice profit for himself if he purchases land at today's depressed values.

In a speech to a farm brokers' forum at the convention, J. Herbert Risheberger, Los Angeles accountant, noted that farm property is preferred in tax treatment over other forms of investment, and added that "the capital gains treatment afforded the increase in the value of farm animals used for breeding purposes, and of growing crops sold with the land make farm investments unusually attractive to high-bracket tax-payers."

Nonetheless, many brokers are calling for action on the price and supply problems plaguing the farmer – though they aren't by any means united

on just what moves to make. Mr. Happ of Pennsylvania, newly elected president of the National Institute of Farm Brokers, claims the organization plans to assert itself before the Government for action on the "chaotic" farm situation, but he isn't yet ready to describe the specific measures it will seek.

New Wheat Variety Termed Outstanding

An outstanding yield record and better than average resistance to mosaic are two major advantages of the new Taylor variety of soft red winter wheat.

That's the report of North Carolina's G. K. Middleton, plant breeder, and T. T. Hebert, plant pathologist. Taylor is being introduced jointly this fall by the North Carolina and South Carolina Stations and the U.S.D.A. after thorough testing.

Middleton says wheat yields, including Taylor, have been "extremely high" in the Official Variety Testing program for 1951-53 in the Piedmont. These are three-year average yields: Coker—47-27—48.7 bushels per acre; Anderson and Purcam—both 47.2 bushels; Taylor—45.9 bushels; Atlas 50 and Chancellor—both 45.8 bushels; and Atlas 66—44.7 bushels.

The average wheat yield in North Carolina is 23 bushels an acre.

In a different testing program—the Uniform Southern Wheat Nurseries trials—Taylor had the highest average yield. In 73 tests scattered over 10 Southern States since 1946, Taylor has averaged 31.1 bushels an acre. It was followed closely by Anderson, Coker 47-27, Atlas 66, and Atlas 50. The total spread among these five varieties was only 2.7 bushels per acre.

As for diseases, Hebert says Taylor has moderate resistance to mosaic, a serious disease. In 1952 at Statesville, on mosaic-infested soil, Taylor yielded 44 bushels an acre; Atlas 66, with poorer mosaic resistance, produced 33 bushels. The principal weakness of Taylor is its lack of mildew resistance.

Taylor seems best adapted to the Piedmont. It has done very well in the Coastal Plain, but mildew is more of a problem there.

North Carolina Extension

—from Father to Son

In these days, a gradual shift of farm ownership may be a good thing. . .

Condensed from Farm Research

Robert S. Smith

THE problem of transferring farm ownership from one generation to the next is a complex one.

Too often a farmer retires or dies without definite plans as to how ownership of his farm will be transferred. A son who has spent years of his life helping to work the family farm is often unjustly burdened or cheated of his rights, family rifts develop, prosperous farms are broken up, or equipment and livestock have to be sold at a sacrifice to raise cash for settling an estate.

Recent developments have made the transfer problem more acute than it used to be. The capital structure of the farm business is changing, taxes are increasingly complex, and shifts are taking place in family-farm living arrangements. In the improved circumstances of modern life, for instance, the average farmer lives longer than he used to, and his son is often a middle-aged man with a family of his own before he inherits the farm. Some plan must be worked out to insure his security and to repay him fairly for his labor. In general, gradual shift of ownership over a period of years will prove most satisfactory to both generations.

Why does a farm family often fail to make specific plans for transferring ownership?

In a recent study made by the Department of Agricultural Economics at Cornell, of 100 sizable farm businesses, it was discovered that only half the fathers and sons farming together had made such specific plans. There are two main reasons for their failure to do so. The disposition of a father's property is a hard thing to talk about, one that families shy away from, and many families do not know how or where to

Reprinted from Farm Research, Geneva, New York

get advice on the problems of transfer. County agents and the Extension Service have not been as well informed on this as on other farm problems and, though lawyers can give legal advice, they do not always understand the farm management problems involved.

ing the farm buildings.

After his father's death the son was stunned to discover that he legally owned only a one-fifth interest in the business. He offered to buy out the interests of his brothers and sisters, but some of them were unwilling to sell to him because he was childless and they wished to keep the farm in the family. After seemingly endless bickering over arrangements for continued operation of the farm, it was decided to incorporate and retain the farm-operating son as a salaried manager, with a small share of the net income as management incentive. Any profits are distributed as dividends

low the son, or sons, to gain ownership as rapidly as is commensurate with the responsibility he carries, and as rapidly as he can pay for it. If the son is an equal partner in management and profit-sharing, he should be working toward a one-half ownership of the farm and its equipment and livestock. If the father has retired from

—from Father to Son

In these days, a gradual shift of farm ownership may be a good thing. . .

Condensed from Farm Research

Robert S. Smith

THE problem of transferring ... average farmer lives longer than

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get advice on the problems of transfer. County agents and the Extension Service have not been as well informed on this as on other farm problems and, though lawyers can give legal advice, they do not always understand the farm management problems involved.

Deliberate or unintentional failure to make a plan can lead to tragic complications for the heirs, as, for example, in the case of a good fruit farm that was a part of the transfer study. There were five children in the family, and all save one were given a college education or its equivalent. The one exception was the son who stayed at home to work for his father. He worked for wages until he was 45, when his father died intestate—that is, without a will. The son had always understood that the farm was to be left to him. In years of low income he put some of his wages back into the business; one year he paid for painting the farm buildings.

After his father's death the son was stunned to discover that he legally owned only a one-fifth interest in the business. He offered to buy out the interests of his brothers and sisters, but some of them were unwilling to sell to him because he was childless and they wished to keep the farm in the family. After seemingly endless bickering over arrangements for continued operation of the farm, it was decided to incorporate and retain the farm-operating son as a salaried manager, with a small share of the net income as management incentive. Any profits are distributed as dividends by the corporation.

The farm-operating son is bitter about his experience, even though he considers that for himself the final arrangement is fortunate. Harmonious family relationships have been destroyed by the conflicts that arose during the settling of the estate.

Difficulties of this type are not uncommon. Many a farmer has seen hardships caused by wills that, though well intentioned, brought dissension and hardship to the family. It is an understandable impulse to feel, as one farmer put it, "If my son wants the farm, he can buy it when I'm gone." But a more equitable arrangement is to allow the son, or sons, to gain ownership as rapidly as is commensurate with the responsibility he carries, and as rapidly as he can pay for it. If the son is an equal partner in management and profit-sharing, he should be working toward a one-half ownership of the farm and its equipment and livestock. If the father has retired from

the management of the business, the son should be working toward complete ownership.

Consequences of poor planning are unnecessary, and they are frequent enough to reveal the need for an educational program that will help families understand the possible plans for farm transfer. Such a program would encourage discussion of the problem within families, where failure to reach an understanding is a serious barrier to intelligent planning. When the family has decided what its objectives are, it can then consult a lawyer, and with his help develop a plan to fit the particular circumstances.

Long Heads, Deep Bodies May Mark Good Milk Cows

Agricultural scientists are now finding evidence that body measurements of a heifer calf—even at three to six months of age—may give a clue to her later performance as a milker.

Research results indicate that a cow with a long head and a long, deep body, as compared with other cows of the same breed and background, will probably make a good milker.

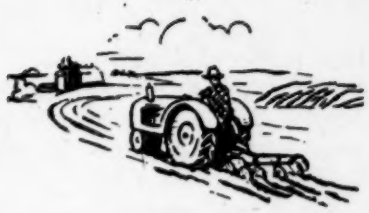
The old question of whether there is a relationship between body form and milking capacity, speculated upon by dairymen for many generations, is at last being subjected to the spotlight of research at the U. S. Department of Agriculture's research center at Beltsville, Md. Ability to spot good milkers among young calves would be worth millions of dollars yearly to the dairy industry.

Of two breeds studied by Bureau of Dairy Industry scientists, Holsteins showed a highly significant relationship between the level of milk production and 18 different body measurements. Jerseys showed significant relationship with only two of the body measurements studied. The reason for this difference between breeds is not yet understood.

Head length and body depth were related to milk production capacity in both breeds, but there was little correlation between body widths and levels of production. Neither did body weight appear to be an important factor in marking a good milk cow.

Body measurements of Holsteins at three and six months of age showed almost the same relationships to later milk production as measurements taken during the first lactation period. This indicates that certain body dimensions in calves may be as good an indication of producing capacity as body dimensions in the lactating cow. *U.S.D.A.*

Texas' Outstanding Conservation Farmer



This tenant had the courage to guarantee results on improvements requested from his landlord . . .

Condensed from Acco Press

JACK GARRETT, a native of Iowa who farms in Texas, is a staunch conservationist. Last May, he was selected the outstanding conservation farmer in Texas in a contest sponsored by the Scripps-Howard newspapers and 23 conservation - minded business firms of the state.

Garrett is the first Lower Rio Grande Valley farmer to win the award since its inception eight years ago. He received $500 for his feat.

The award was made from a field of 87 entries from all over the State of Texas.

Jack first came to Texas during World War II when he served as an Air Corps instructor at Randolph Field. It was there that a mutual friend introduced him to a Texas girl, Mary Seago. Jack and Mary were married in 1943. She was from Brownsville and gave Jack glowing reports of the Rio Grande Valley.

When Jack came back from the South Pacific in 1946, he and his wife spent his terminal leave at her home in Brownsville.

The longer Jack stayed in the Valley, the more he became convinced that his wife's stories about her home were true. He decided to become a Valley farmer.

Farm equipment was in short supply then, as was his money, and so Jack Garrett worked for a year as parts manager for a Lower Valley auto concern. Then, in 1947, he started farming on rented land with a small amount of equipment purchased with savings. It didn't take Garrett long during the first year to learn that cotton-farming is quite different from Iowa corn-growing. The rented

Reprinted by permission from Acco Press, Houston, Texas

land was traditionally half-bale-to-the-acre. Garrett figured the land could produce more if it were level and could be uniformly watered.

Land leveling, while expensive, would pay in increased yields, he thought. The landlord wasn't sold on the idea of conservation irrigation and told his tenant that the work would have to pay for itself with a bigger crop. Otherwise, he said, the money would have to come from Garrett's pocket. But the ex-GI was so sold on the idea that he joined the Southernmost Soil Conservation District and enlisted the aid of SCS technicians. The field work started in the fall of 1948 and 55 acres were leveled at a cost of $54 each.

That 55 acres produced 69 bales of cotton in 1949, the first year of operating with level land and maximum irrigation efficiency. The next year, under cotton acreage restrictions, a plat measured by the PMA as 40 acres, produced 87 bales of cotton.

Garrett was experimenting with varieties that year. He planted 20 acres in Deltapine 15, and 20 acres in Empire. The crop was hand-picked five times and produced 87 bales of cotton. In 1951 Garrett made a test of the Empire variety on 11 acres. He cultivated and watered the cotton the best he knew how and got 27 bales from the plat. The cotton averaged one-and-one-sixteenth inch staple length and turned out 35 to 37% lint.

Incidentally, the increased yields paid the $54-an-acre leveling costs with the first two crops. The landlord was happy the young engineer - turned - farmer had insisted on the operation.

Feeder Lamb Prospects 'Promising'

Prospects for profits in feeding lambs in '54 "seem rather promising," according to opinions by USDA economists.

Prices of feeder lambs are low enough to allow adequate price margins in feeding if prices of slaughter lambs are fairly strong this winter. Federal specialists expect less lamb feeding and moderately less slaughter of fed lambs this winter than last.

They note the fair to poor profits in lamb feeding during the last two seasons are holding back feeding operations this fall. The specialists figure wool prices in '54 may average about the same as prices this year.

University of Wyoming

YOUR FARM POND

It may be the most valuable acre on your farm. A farm pond supplies water for livestock, irrigation, fire fighting and fishing. . .

Condensed from The Southern Planter

E. W. Mundie

ONE of our Virginia county soil conservationists said this to me a few days ago, "They are running me crazy. Seventy-five people in this county want to build farm ponds right now."

No one would disagree with the conservationist that 75 requests from one county shows some real interest in farm pond construction. Farmers are building ponds, lots of them, all over Virginia from the mountains to the seashore. There are many practical uses for farm ponds and farmers have found most of them.

Flood control, yes! There's nothing like stopping trouble where trouble begins, and most of the time when water is on the move it is trouble going some place to happen. Farm ponds store this water at home.

Ponds, in addition to aiding in flood control, also provide comfort and assurance as a source of water for fire protection if located near dwellings and other farm buildings. Many ponds have been constructed close enough to farm buildings to serve this purpose.

Water, when stored in farm ponds, not only prevents lots of trouble but it gives lots of pleasure. For who doesn't like to fish and skate and boat ride, especially when you can do these things right at home.

Besides avoiding trouble and adding pleasure, ponds may be real work horses in farm operations. They provide sources of water for irrigation.

With the extensive droughts of recent years and more particularly the one of 1953 which has seriously affected crops and livestock production, farmers have

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realized that "it is wise to store up water for the dry time too."

Then there are the drinking water requirements of livestock to be met. Many acres are without water in dry years that would furnish large amounts of grazing if supplied with water. Farm ponds can be profitably used on many farms to help meet this need.

Still another use that farmers have found for ponds is supplying water for spraying.

Do you know of any other acre of the farm that can do so many things—help to prevent floods, provide sources of water for fire protection, for irrigation, for live stock, for spraying and still be available for fishing, boating and skating.

Farm ponds prevent trouble, add pleasure and work 24 hours around the clock for the betterment of life on the farm.

If you are willing to do the necessary things and want a pond, here are a dozen tips that will aid you with the job:

1. Recognize that certain basic principles must be followed in the design and construction of a pond if it is to do the job for which it is built.

2. The first step in planning the pond is to decide what size pond you need.

3. Use care in selecting the site. Do not begin construction of the pond until you are sure that you have a suitable site for the kind of pond you want.

4. Test the soil. A pond that does not hold water is a disappointment and a poor financial investment.

5. A survey is necessary. From this survey, plans showing the detailed dimensions of the dam and other features should be made.

6. Planning the spillway is important. The type and size of spillway is an important feature of your pond. Too small a spillway can easily lead to complete failure of your pond.

7. The top of your dam should be at least 8 feet wide. The down stream slope of the fill should be two feet horizontal for every one foot rise. The front slope (water side) should be three feet horizontal for every one foot rise.

8. Plan your pond so that it can be drained if necessary. A pipe should be placed under the dam to permit drainage.

9. The side spillway is usually built while you are building the dam. The material removed from the spillway may be used in the fill for the dam if it is suitable.

10. You are now ready to finish the pond but let's not stop yet. The dam and spillway should be limed, fertilized and seeded with a good grass mixture

and mulched with manure, straw or other similar materials.

11. All ponds require management and maintenance. Inspect your pond often.

12. If you live in a Soil Conservation District get the district to assist you in the steps that have been outlined. Proper planning is important in pond construction. Don't forget, it is useless to spend your money and time to build a pond unless you apply the necessary conservation practices to the watershed to prevent your pond from filling up with silt.

More Cows and More Milk In '54

Until recently, the output of milk just about kept pace with the growth of population. It rated as the steadiest thing in farming in this country.

But, in the past twelve months or so, economists of the U. S. Department of Agriculture note that milk flow behaved in a very unusual way. In July '52 the rate of milk flow was way down. Last fall and winter it swelled further and faster than ever before. Then last summer, when pastures dried up, it sunk slowly back again.

The economists point out that favorable weather, good hay, and more milk cows caused most of the increase in output last winter and spring. At the beginning of this year the ratio of young stock to mature cows on farms was at an all-time high. So milk cow numbers could be increased substantially more in the next two or three years.

And the specialists see several influences that may bring about such increases. They think the drop in net income may cause many farmers to shift to milk production to try to keep in cash. As far as they can see into the future, feed seems likely to be plentiful. The shift of land from cotton, wheat and corn to alfalfa, grain sorghums, and pasture will tend to increase cow numbers.

Considering the various influences, the economists expect a recovery in the annual rate of milk production next year with consumer and export demand no greater in '54 than this year. They figure production may run about the same as this year, or about 118 billion pounds, which seems likely to prove about 3 per cent more than the rate of use, if '54 prices are anywhere near those of this year.

Farm, Ranch & Home News

Latest in Broiler Feeding

How feed efficiency and growth have been improved. . .

Condensed from American Poultry Journal

J. R. Couch

PRIOR to 1940, the broiler raiser was very happy to be able to produce birds that would average about 2 lbs. at 10 weeks of age, and was able to obtain only about 25 lbs. of broilers from 100 lbs. of feed. It is now a common occurrence for broilers to average 3 to 3½ lbs. at 10 weeks and 100 lbs. of feed will produce from 33 to 38 lbs. of broilers.

A number of developments during the past decade made this possible. The geneticist has continued to improve breeds, strains and crosses which give the broiler grower a better bird to start feeding. Miraculous advances have been made in the field of poultry feeding which have resulted in an increase in growth in a shorter period of time, and less feed is necessary to produce the finished product.

Some of these more recent developments in poultry feeding are the use of high energy-low fiber broiler ration, the isolation of vitamin B12, the use of high levels of other B vitamins and the discovery of the growth promoting activity of antibiotics. This list would not be complete without a discussion of the newer unidentified factor sources which are being added to broiler feed. These include dried whey, butyl fermentation solubles, dried brewers yeast, dehydrated alfalfa leaf meal, fish and fish solubles.

Reducing Fiber Content Increases Energy Content

Since the chicken is now expected to grow more rapidly and use feed more efficiently than was thought possible 10 years ago, poultry nutritionists have found it necessary to use somewhat higher levels of nutrients than had hitherto been thought to be necessary.

From 21 to 22% protein has

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been used in the broiler experiments conducted in the laboratories of the Poultry Department of the Texas Agricultural and Mechanical College System, College Station, Texas, during the past 4 years. This higher level of protein is also being routinely used in the formulation of broiler feeds by many of the most progressive feed manufacturers in the country today.

It is assumed in this instance that the protein is properly balanced with regard to the amino acid composition. It is known that the growing broiler requires at least 11 essential amino acids. Research conducted during the past 5 years in a number of poultry nutrition laboratories has shown that the addition of feed grade methionine at a level of 1/2 to 1 lb. per ton to a broiler feed will produce a slight increase in growth, an improvement in feed efficiency and an improvement when feathering troubles are encountered. Sources of unidentified factors such as dried whey, fish meal and fish solubles are necessary for the maximum methionine response.

The chicken cannot digest fiber, and every effort is being made to find new ways and means of further reducing the fiber content of broiler feeds. Each time the fiber content of the feed is reduced, the energy content is accordingly increased, resulting in improved feed efficiency and possibly increase in growth.

Vitamin A Levels Have Been Stepped Up

There are 3 minerals which much be balanced in broiler feeds. These are calcium, phosphorus and manganese. It has been the practice in the laboratories of the poultry department to use from 1.4 to 1.6% calcium, from 0.7 to 0.8% phosphorous and 10 grams of manganese sulfate per 100 lbs. of feed. It is believed that these higher levels of minerals are necessary for a bird that is growing very rapidly and consuming as little as 2.5 lbs. of feed per pound of chicken produced in some instances.

Higher B-vitamin levels have been used in our work than have heretofore been thought to be necessary. The levels of B vitamins which are hereby recommended are as follows: riboflavin, 4 grams per ton; calcium pantothenate, 8 to 10 grams per ton niacin, 25 to 30 grams per ton; choline chloride, 200 to 400 grams per ton; vitamin B12, 3 to 5 mg. per ton. It should be emphasized that these levels of B vitamins are added over and above the quantities

which occur in the usual feed ingredients.

Vitamin A levels used in broiler feeds have also been stepped up. Broiler feeds which have been used in our experiments contained from 3000 to 4000 I. U. vitamin A per pound of feed. Two sources of vitamin A or provitamin A are used. One such source is dehydrated alfalfa leaf meal, which provides carotene or provitamin A. Another source is fortified fish oil or one of the stabilized vitaman A products currently available to the feed manufacturer. Fortified fish oil, however, is a relatively poor source of vitamin A to use in mixed feeds because the vitamin is unstable.

It is known that vitamin D3 is necessary for the metabolism of calcium and phosphorus, for the formation of bones and for the general well being of the birds. Six hundred I.C.U. of vitamin D3 are being added to broiler feed mixed in these laboratories at the present time. This level has been found to produce strong bones and good birds.

Feed Should Contain An Antibiotic

One of the most dramatic announcements in the field of animal nutrition was made in 1950 by research workers of Lederle Laboratories to the effect that antibiotics would increase the growth of chickens. It has always been felt that the work at the Texas Agricultural Experiment Station provided an additional impetus which led to the discovery that antibiotics stimulate chick growth. Research work on the use of antibiotics in broiler feeds has now been in progress for over three years. It is now an established fact that the feed should contain an antibiotic or antibiotics. The common practice at present is to add 10 grams of aureomycin, terramycin or bacitracin or 2 to 4 grams of penicillin per ton of mixed feed.

Research reports from a number of laboratories have shown that combinations of antibiotics tend to produce more consistent growth increases and improvements in feed efficiency than do single ones when added to a broiler feed. This does not mean that the combinations of antibiotics will produce broilers that weigh more than those fed a single antibiotic, but does mean that results obtained from using the drugs in the feed will be more consistent and there will be fewer failures if combinations of antibiotics are used in broiler feeds.

Effects of Arsonic Acids

Arsonic acids have been shown to improve growth slight-

ly, to have a definite effect in improving feed efficiency and to produce a deeper pigmented carcass even when added to feeds containing antibiotics or combinations of the drugs. It is wise in this instance to follow the recommendations of the manufacturer when adding an arsonic acid to the feed.

Antibotics and arsonic acids have been shown to produce the favorable effect on growth and feed efficiency by assisting in the control of unfavorable bacteria within the digestic tract of the bird. Experiments have been conducted in which it was shown that antibiotics or arsonic acids failed to have any effect on growth or feed efficiency when the premises were devoid of disease. This has led to the term "disease level" in attempting to explain the growth promoting activity of antibiotics.

All of this is indeed fortunate because the broiler producer always has a high unidentified "disease level" on the premises regardless of the fact that every effort may be made to clean the buildings and other parts of the ground after each brood of broilers. Antibiotics and arsonic acids help to control the unidentified "disease level" in broiler flocks.

Unidentified Growth Factor Sources

The subject of unidentified growth factors now occupies most of the research effort and thinking of the poultry nutritionist today. An **unidentified factor** may be defined as, "That improvement in growth, feed efficiency or feathering which results when an ingredient is added to a feed formulated so as to contain necessary amino acids, minerals, the known vitamins, antibiotics and sources of energy." Certain feed ingredients including dried whey, dried brewers yeast, distillers dried solubles, dried butyl fermentation solubles, condensed fish solubles, fish meal and dehydrated alfalfa leaf meal have been shown to increase broiler growth when added to feeds considered to be complete with respect to all known required nutrients including antibiotics.

One of these growth factors has been designated as the "whey factor", which is found in dried whey, butyl fermentation solubles, distillers dried solubles and dried brewers yeast. A second has been designated as the "fish factor" and is found in fish meal and condensed fish solubles. The growth factor found in dehydrated alfalfa leaf meal is one which has been recently report-

ed but not definitely shown to be different from or identical with the two described above.

The feed manufacturer does not need to add a high percentage of any one of the unidentified factor sources. From 1½ to 3% of such sources is adequate in a broiler feed. The main thing for the feed manufacturer and the broiler grower to remember is that one or more sources of each of the unidentified factors should be used if maximum results are expected. It should be emphasized that these unidentified growth factor sources have been shown to produce responses in chicks kept on litter under practical conditions in our laboratories. Thus, there is little question as to the existence of such factors.

In summary, it should be stated that the feed manufacturer and the broiler raiser should ascertain that the broiler feed is well balanced and well fortified.

Overeating Grain Causes Lamb Loss

Overeating grain commonly causes severe losses in feeder lambs. Veterinarians at the University of Illinois say such losses may occur shortly after you turn your lambs in to a stalk field with a large amount of shelled corn scattered over the ground. Or it might happen late in the feeding period when the lambs are on full feed if you give them too much grain.

To stop lambs from overeating shelled corn in a stalk field, restrict the flock to a small area in the field with a temporary fence, the veterinarians suggest. The idea is to keep the lambs from gorging themselves with too much shelled corn.

Lambs that die from overeating late in the feeding period are generally the best feeders in the lot. The margin between a safe and dangerous grain ration is not very great. There is always a potential danger from digestive disorders whenever the grain portion of the ration is more than one pound for each lamb each day.

The practical way to prevent overeating losses before they happen is to keep the grain allowance to less than a pound a head a day. Each lamb should have no more room than is necessary at the feeding trough. About 12 inches for each lamb is enough.

Treatment of affected lambs is only rarely successful. Reduce the grain ration and losses will usually stop abruptly. See your local veterinarian about preventive vaccination.

University of Illinois

Tomorrow's Fruit Varieties

Great changes are in store if plans of plant breeders and explorers are successful. . .

Condensed from American Fruit Grower

L. F. Hough

THE fruit industries of the new world can be traced to the importation of seeds or scions from the fruit growing regions of the old world. As agriculture in this country became more intensive and more specialized, the trial and error testing of early fruit growers gave way to systematic testing through the agricultural experiment stations.

Peaches are among the oldest of the deciduous fruits introduced to this continent, for they were brought in by the Spaniards to Florida and Mexico in the 16th century.

The first direct Chinese importations were potted plants of the Shanghai or Chinese Cling peach in 1850 by Charles Downing. Other Chinese importations followed in short order. Elberta is presumed to be a hybrid of the Chinese and European types.

At the present time there are 26 experiment stations supporting peach breeding programs and during the last two decades this breeding work has brought out more than 100 new varieties.

As the early Spanish introductions became acclimated through generations certain unusual and highly desirable characterestics have become evident. Among these are the occasionally hardy groves of "Indian" peaches in isolated areas of Colorado and other parts of the southwest that have been reported by Dr. A. C. Hildreth.

Recently a few of the southern experiment stations, notably California and Texas, have been working with southern honey peaches and a south China importation, the evergreen "saucer" peach, to develop varieties that require very little winter chilling.

Reprinted by permission from American Fruit Grower, Cleveland, Ohio

After World War I, still other new genes were made available through the Russian scientist, Nicolai I. Vavilov. A remarkable level of hardiness was observed in a seemingly worthless group of small-fruited white-fleshed peach seedlings from the northern region of the Caucasus Mountains. The New Hampshire experiment station has carried this material through two succeeding generations and there is promise that it will not be many more years until we have distinctly hardier peaches that will extend peach growing northward.

Several selections of wild peaches from Yunnan province in central China have been proved to have roots resistant to strains of nematodes which plague the southern peach grower. The behavior of the first trees of these selections gives some assurance that they are remarkably strong and will be long-lived.

During the last 100 years there have been numerous importations of ornamental apples. Some of these small-fruited immigrants promised to have real value in the development of commercial apple varieties of the future when second generation seedlings from a cross between Rome Beauty and a clone of *Malus floribund floribunda* were found to segregate for resistance to apple scab.

This species from Japan was one of the first ornamental crab apple introductions. The observation in 1943 at the Illinois Agricultural Experiment Station of segregation for this striking resistance to apple scab stimulated a survey of apple material available in orboreta and breeding collections.

Specimens in several other species from widely separated areas of Eurasia were found that appeared to be immune in the field.

Seed from the north slopes of the Caucasus Mountains collected during one of the many plant explorations directed by Dr. Vavilov has also given scab-resistant selections.

Correspondence with fruit breeders in other parts of the world, particularly Germany, revealed also that one of the indifferent cultivated varieties of central Europe, Antonovka Kamenitschka, transmitted a high level of resistance to some of its seedlings.

Not long ago the late F. C. Bradford pointed out that some of the half-wild juice varieties of apples from Europe offered promise for the expansion of apple growing to include a special juice industry. He visualized an aromatic and flavorful beverage made from blends of

the bitter-sharp European juice varieties with our bland, sweet dessert varieties that would be much more delectable than the fresh apple juice known in this country.

At the turn of the century it became apparent that blight resistant pears existed in the Oriental species, while practically all of the European pear varieties and their progeny were susceptible to this disease when grown in this country.

Courageous plant explorers made pilgrimages to China and Manchuria and collected pear species and cultivated varieties. Many of the varieties they found seemed to have large and attractive fruits but possessed a crisp, breaking, granular flesh texture which was quite different from the melting buttery texture that we associate with high quality. The task was to combine the desirable blight resistance of these Oriental immigrants with the flesh texture and quality of the best European pears.

Many unanticipated problems have delayed the achievement of this goal.

Our Canadian neighbors have suggested that the sour cherry industry may be extended northward by the incorporation of the extreme hardiness of some of the Russian varieties. The Minnesota Experiment Station has demonstrated the feasibility of this hypothesis by the recent introduction of the hardy Northstar cherry developed through a parallel breeding program using the remarkable hardiness found in a sour cherry imported from Siberia.

The culture of high quality European type plums can just as surely be extended northward through the use of the hardiest forms of this species such as Cherkoff-Karkoff and other northern European varieties as parents.

Apricots are still another fruit which just recently seem likely to become much more widely adapted as a result of plant exploration. At the present time this fruit is limited in its commercial cultivation to the sheltered areas along the west coast. Most of our varieties originated from apricots grown in the fruit growing regions bordering the Mediterranean where winter hardiness and spring frosts are not a problem.

Recently the Canadians and the late Dr. Hansen obtained apricots from northern Manchuria, some of which seemed to be hardy in Canada about as far north as trees will grow. Paradoxically, the bloom of the hardiest of these will not survive the somewhat less steady cold and frosty springs of the northern United States.

However, the Division of Plant Exploration and Introduction has just fruited apricots that resulted from seeds collected in the highlands of northern Persia. Some of these seedlings have been usually late blooming and have exhibited many of the desirable fruit characters of our best commercial varieties. Certainly here are the makings of high quality and attractive apricot varieties that will be adapted to nearly all of the temperature fruit growing regions of the world.

Hormone Injections Boost Beef Gains

Injections of the male hormone, testosterone, into beef animals have brought faster and cheaper gains in tests at the Oregon State College agricultural experiment station.

Dr. Ralph Bogart, geneticist, reports that steers receiving the hormone injections gained about three-tenths of a pound more a day than untreated animals. Heifers did even better, gaining over one-half pound a day more than untreated heifers.

Animals that received the hormone shots also required less feed in total digestible nutrients (TDN) to put on 100 pounds of gain. Treated heifers took only 393 pounds TDN to gain 100 pounds while untreated heifers ate 507 pounds TDN for each 100 pounds gain. Treated steers ate 365 pounds TDN while untreated steers needed 430 pounds TDN per 100 pounds of gain.

Testosterone-treated animals produced more protein and less fat. Dr. Bogart explained that the treated cattle continued to grow beyond the point where growth usually swings over to fat production. Most treated and untreated cattle graded choice.

A taste panel found no difference in taste between treated and untreated animals, although they did note some loss of tenderness in meat from treated steers.

The geneticist believes the growth increase is the result of hormone stimulation of the pituitary gland which, in turn, steps up thyroid activity that regulates growth. Several questions remain unanswered. A more practical method of administering the hormone than the weekly injection is needed. Bogart is working on methods for mixing testosterone in a ration and for implanting hormone pellets under the animal's skin. Researchers must also make sure that there is no hormone carryover in meat after it is cooked.

Oregon State College

For Northeast Livestock:

ACRES UNLIMITED

New machinery, chemicals and long-lived birdsfoot trefoil can renovate millions of acres of neglected permanent pastures . . .

Condensed from New Jersey Farm and Garden

Thomas E. Milliman

FIFTEEN years ago, I would have advised a young farmer not to get into the beef breeding business here in the Northeast. For every success there were a hundred failures. But times have changed—and radically so. I now say without hesitation that we can justify:

- Establishment of beef breeding herds.
- Addition of a few half-blood beef animals to dairy herds for home consumption.
- Operation of swine enterprises on farms where corn is available and legumes grow plentifully.
- Sheep where they can be fitted into a farming operation without too much expense for fencing.

I believe that the Northeast now offers the greatest opportunity of any area in the country for profitably increasing livestock numbers. Here's why:

1. Our Northeastern population continues to expand—probably at its current rate until at least 1975. But so is the population elsewhere. Each year, for instance, the enormous population of the West Coast reaches farther and farther East for its meat supplies. The Midwest population grows, also, and eats a little higher proportion of the beef it raises. The South, at long last, is prosperous and its people are eating more and more beef and hogs. More people, then, have to be fed within each area.

2. Sources of supply of "outside" beef will not outrun population. The Great Plains of the western ranges, all the way from

Reprinted by permission from New Jersey Farm and Garden, Sea Isle City, New Jersey

the Canadian line to the Gulf of Mexico, reached the practical limit of cattle population very recently. Without additional irrigation, where available, and without intensive fertilization, where there is rainfall, the Great Plains area of the West cannot step up its cattle numbers much more. Use of chemicals to destroy unwanted mesquite and other brush some day will result in a moderate increase. Right now, it is enormously expensive to remove brush by mechanical means, as King Ranch has found.

We will be hard pressed to adequately supply meat demand on a national basis when we experience a population increase of 25% in the next quarter century.

3. Although it is true that the total area of the Northeast is small, we can profitably push up the percentage of cattle numbers or livestock numbers faster, and with less expense, than any other region in this great nation. The answer lies in renovation of our "neglected acres." Let's analyze this for a moment:

In the 12 Northeastern states, the census shows the existence of 13 1/3 million acres of permanent pastures. Of the cleared land that is in farms here, 30% consists of "permanent" pastures, that is, pastures that have not been plowed within seven years. Some haven't been touched by a plow within memory of living man.

Within the states of New York, New Jersey, and 16 counties in northern Pennsylvania, we have almost 6 million acres of neglected pastures. Competent agronomists have estimated that the average annual yield of these pastures (adjusted to a timothy equivalent) would not exceed one-half ton per acre!

But the same authorities agree that by tearing up the old pastures, liming where needed, fertilizing and seeding with birdsfoot trefoil and a grass, the resulting yield could be increased to two tons per acre, and probably more.

If 25% of this great acreage in the 2½ states mentioned were renovated, and put into that remarkable legume, we could graze *one million more animal units* than we do today, or a few less than a half million cows could be supported on a year-around basis from that newfound forage.

It makes good arithmetic no matter how you look at it, in terms of future stability for this area: You need not carry more beef or dairy animals. Instead, you can support existing herds more completely without buying

so much imported feed, or you can make hay on this poorer land and release other cropland for corn, oats or even cash crops.

Why has such an enormous acreage been neglected so long? There have been several reasons. For one, only lately do we have an increased consumer market. This trend will continue. We now have sufficient power and renovating tools to do the job. Finally, we have a legume that will stay down long enough, and yield high enough, to make it all worth-while.

All of these things have come within the past 15 years.

Today we have power in the form of two-plow and three-plow tractors. A few farms have diesel crawler tractors, and these are all the better for the purposes in mind. Not less than 25% of the present neglected pastures can be worked with wheel tractors. On some farms, as much as half and two-thirds of the roughland can be brought into production by tractor power on wheels.

Another deterrent, even in the immediate past, has been the fact that farmers have had only the plow with which to destroy the old sod of roughland pastures. The plow cannot be used with efficiency on some of the roughlands—on certain places, not at all. On some fields where it can be used at a reasonable rate of production per hour, erosion would be a sure result. The best time to tear up old thin sods is in the summer and fall. That lets them weather through the winter. But sloping land, even plowed on the contour, is apt to wash.

Today we have a substitute for the plow in the form of several implements. One is an enormous disk harrow with 10 disks, 28 inches in diameter and 12 inches apart. The machine weighs 4,000 pounds and requires a four-plow diesel crawler to pull it. It is strictly a piece of equipment for the bulldozer owner who will contract to do renovation by the hour.

A pasture renovation disk harrow heavy enough to tear up sods, yet small enough for the three-plow tractor, now delivers from a well-known tractor firm for only about $330, including hydraulic connection. After studying disks for a year, I bought one of these for my own farm.

Still another implement is the heavy field cultivator the best example of which is the Graham-Hoeme type of plow. The word "plow" is a misnomer, but the Graham-Hoeme will tear up sod and will not clog. It, too, requires a three-plow tractor.

The final instrument I will mention is the toolbar tiller, a field cultivator with strong shanks. It can be mounted on such tractors as the Ford, the Ferguson, the J. I. Case two-plow tractor and a number of others. The cost is only about $250. It, too, will do the job of tearing up sod, although more time and fuel are required in renovating an acre.

A disadvantage of all of the field cultivators is that once sods are cut loose, the tendency is merely to push them around. Advantage of the heavy disk is that it chews up sods well enough that in the spring conventional tillage equipment can be brought in. That way, the field can be quickly seeded to birdsfoot trefoil with a grass, with or without oats as a nurse crop.

All of these machines mentioned have the great advantage of leaving the land so that it will not erode either in the late fall, the winter, or as the result of early spring freshets. The sods and fibers stay on top and prevent erosion.

Markets, power tillage equipment, fertilizer, lime, seed and good yield are of little avail if the seeding of birdsfoot trefoil must be repeated every three or four years. Men will not work the uneven hillsides and rough level pieces of our neglected pastures for anything as fleeting as red clover, ladino clover, alsike or alfalfa. All these fade out in competition with grasses. No greater proof is necessary than to observe the continuation of neglect after 40 years of urging by colleges. The cost of renovating every three years or so is too great. Farmers have been right. Birdsfoot trefoil is the one legume we've found so far with the ability to withstand the competition of grasses, take neglect and abuse, survive and yield well with moderate fertilization.

Destruction of old sod by chemicals is also effective, and much work has been done on this at Rutgers.

The opportunity does not lie only with our neglected pastures. It exists also with rotated pastures and hayfields on cropland, most of which are yielding far below their profit potential. The best rotated pastures can be made to yield $100 value of beef to the acre annually. The birdsfoot pastures on roughlands, where they are moderately cared for, are good for more than half that for beef. For cows it's a poor birdsfoot pasture that won't yield $150 worth of milk.

How to Save Money and Motors

Advice on how to plan your wiring and protect it with proper fuses. . .

Condensed from Pennsylvania Farmer

Richard C. Hamsher

THE increase in the use of electricity on farms has been one of our greatest advancements in agriculture in recent years. But, this advancement has also brought with it a few problems. Namely: Does your farm have adequate wiring? Are you using proper fusing for safety? Are your motors protected from dangerous overloads?

Most farm wiring installations made before World War II now need revision to accommodate present and planned equipment installation. To better illustrate this point let us look at a few figures concerning the cost of electricity lost in several of the smaller-type wires now in use.

The following cost figures not only show the actual cost of electricity but also show that the loss is sufficient to cause unsatisfactory performance of equipment. If your present wiring system is antiquated we recommend you contact the farm representative of your local power company. He can give you a properly designed wiring plan which you can use to obtain installation bids from competent electricians.

When a wire is loaded substantially beyond its current-carrying capacity, it will burn out. The sure way to prevent wiring from being over loaded is to protect each circuit with a proper fuse or circuit breaker. Find out what size wire makes up each circuit and fuse according to the chart below.

Many motors are burned out each year on the farm due to

Reprinted by permission from Pennsylvania Farmer, Pittsburgh, Pa.

inadequate wiring and dangerous overloads. Ordinary type fuses will not normally protect your motors from burning out.

When any motor starts, it will pull down three to five times its normal operating current. For instance, a three-horsepower motor draws approximately 17 amperes to operate at full load. To start, this same motor requires anywhere from 50 to 80 amperes. That's why most farmers put in 60-ampere fuses—to handle that starting load. Ordinarily a three-horsepower motor returns to the 17-ampere running current in 20 to 40 seconds. If it doesn't—due to dry bearings, tight belts, or for other reasons—the 60-ampere fuse won't normally blow out. Result? The motor is damaged, sometimes completely burned out.

If the same motor was fused with a 17-ampere fusetron, this wouldn't have happened. The fusetron is a time-delayed fuse and allows for this stepped-up starting current. However, if the motor doesn't drop back to the ordinary running current in the 20 to 40-second interval, it blows out—thus protecting the motor.

Fusetrons come in the plug and cartridge type which will fit the fuse box through which your motor is wired. The fustats are of the plug type and have a tamper-resisting base. This prevents anyone replacing them with a penny or other substitute for the fustat or with a size too large to protect. To select the proper size fustat or fusetron for motor protection see the ampere rating on the name plate of the motor and get the same size fustat or fusetron as the ampere rating of the motor.

Prevent Overloads

Size Wire	Fuse Size (Amperes*
14	15
12	20
10	30
8	40
6	55
4	70
2	95
0	125

*Fuse size should not be more than the allowable current-carrying capacity of the wire.

Correct lubrication of motor bearings is essential; don't over lubricate. Excessive oil and grease harm motor windings and may put excessive pressure on the bearings. Many pieces of modern farm equipment have sealed bearings and require no lubrication. Follow manufacturers' directions.

They point out that proper protection not only prolongs motor life but it also eliminates a fire hazard.

MONEY IS LOST HERE

Wire Size	Length of Run Feet	Load in Amperes (Obtained by Getting Name Plate Amp. Rating of Equip. on Circuit	Dollar Loss
No. 14	200	15	$2.40
No. 12	200	15	$1.44
No. 12	200	20	$2.56

Based on 500 hrs. of use at 2c per KWH.

Pressurized Ventilation for Dairy Barns

A new type of ventilating system for dairy barns is being tried with some success. The new system is called pressurized ventilation, reports Stan Witzel, farm engineer at the University of Wisconsin.

Witzel says pressurized ventilation has been used in a dairy barn at the state prison farm for two years. Ventilation of this type is also being used in milk houses and will soon be tried in poultry houses.

Here's how it works. Cold and warm air are mixed in the barn by fans along the side walls. The fans bring cold air in from outside and attract the warm air from the center of the barn. Deflectors then direct the air along walls and ceiling. Exhaust fans remove moisture-laden air from the building.

Witzel says this arrangement makes more efficient ventilation than when only exhaust fans are used. The prison dairy barn proved a ventilation problem before the new system was installed. The barn has a 10-inch, 4½-foot concrete wall; above is a wood frame with many windows. Walls were always wet during cold weather. Four sidewall fans and deflectors are located along the walls with an exhaust fan at each end of the barn. A thermostat in the center of the barn controls all fans.

The system has kept the barn walls dry and the air fresh and free from odors, Witzel says. He adds that the fans are now commercially available.

University of Wisconsin

PLANNED FARMING PAYS

For six years, twelve farmers followed a tailor-made plan to prove it. . .

Condensed from The Nation's Agriculture

THERE are a dozen family-sized farms in northern Vermont that can give small farmers throughout America one answer to the question. "How can we make more money?"

As a result of a six-year study, these 12 farmers can offer scientific proof that good farm planning pays—and pays well! Evidence of the dollar value of planning was shown last year when an individual farm plan meant an extra dividend of nearly $2,000 for each farmer.

The study, started in 1946, was carried on jointly by the University of Vermont Agricultural Experiment Station, Harvard University and the Charles H. Hood Foundation. Object of the research project was to check the effectiveness of farm planning and to test the practical use of individual farm planning as an extension service teaching method.

The 12 farmers who live in Franklin County, each followed a tailor-made plan for six years. During that time they tripled their labor income and in 1952 averaged $4,564. Separated from the Franklin county farms only by a mountain, 12 other Vermont farmers, who in 1946 had about the same labor incomes, crop acreage, farm workers, milk production per cow, and investment, were able to mark up a labor income of only $2,623 for '52.

Reason for this difference in income can be credited to individual farm planning.

Farm management specialists first picked a number of farms

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in Franklin County and in neighboring Orleans County. They selected "average" farms which could be paired off on the basis of similar income, number of cows, milk production, and farm management practices, then being carried on. Even the ages of the farm managers were about the same, the Franklin county farmers averaged 35 years of age and the Orleans men 34, when the survey started in 1946.

The farm management workers obtained a farm business record, general information about farm practices and recent changes in the organization and management from all farmers in both groups.

Then the management specialists made an analysis of each of the 12 Franklin County farms and suggested two or more alternate farm plans which could be followed. The farmer picked the one which he considered best. In no cases were radical changes suggested in the farm operation. In general, all plans aimed towards the goal of having a sound farm business of adequate size, good cows, use of fertilizer, increased production of higher quality roughage and the efficient use of labor.

One Franklin County farmer was advised to invest in additional labor saving equipment. Use of more fertilizer and lime was prescribed to another. One was told that he didn't have a large enough farm and that he should buy adjoining acres or move to a larger place. He chose the latter. The specialists suggested that one man feed more grain per cow and another was advised to add cows to his herd.

No one of these farm plans applied to all farms. Each was tailor-made for the individual farm, and patterned so the farmer could follow it in a practical manner.

In the Spring of 1952, all 24 farms were revisited by the agricultural research men and a second business record was obtained from each farmer. Ownership was checked to make sure that the same two farmers were operating the two dozen farms.

Although the check group of farms in Orleans county kept abreast of good practices and improved their farm management during the six year period, they could not keep up with the farms which had individual farm planning.

Just what did the farmers with a plan do to make more money? Briefly they increased the number of cows per farm while their Orleans county neighbors and most other Vermont farmers decreased cow numbers. They increased milk

production per cow by 20 per cent while the check group of 12 farms increased it by only 10 per cent. They increased their crop acreage, while the check group cut acreage. They decreased labor force on the farm by 12 per cent and increased work done per man by 25 per cent. The check group farmers decreased labor force by only 5 percent and made no change in work done per man.

None of the 12 Franklin county farmers made any spectacular change in any one farm management factor. The reason for their higher farm incomes was the result of slightly higher increases in milk production per cow, size of farm, labor efficiency, and fall milk production.

Comparison of 2 groups of Vermont Farms

	1946		1952	
	with farm planning guidance	without farm planning guidance	with farm planning guidance	without farm planning guidance
Acres operated	254	267	280	278
Acres of cropland	76.0	83.7	87.3	81.5
Number of cows	33	33	37	32
Labor income	$1,552	$1,551	$4,564	$2,623
Man per farm	2.4	2.0	2.1	1.9
Pounds of 4.0 per cent milk produced per cow	5,713	6,059	6,770	6,605
Pounds of grain fed per cow	2,367	2,668	2,387	2,543

Proper Timing Can Save Tax Money

You may be able to make some important savings on the amount of taxes paid on your 1953 income by proper timing of income and deductible expenses, according to Everett E. Peterson, Nebraska extension agricultural economist.

This possibility has arisen because of two factors—farm incomes are expected to be lower in 1954 than in 1953, and tax rates go down on January 1, 1954. Peterson says this means that, in general, it will pay to defer income whenever possible and legal until after the first of the year and to take all possible deductions this year.

Another possible way of reducing the tax would be to take capital losses in 1953 and defer capital gains until 1954. Of course, this shouldn't be overdone or the farmer may find himself in a higher tax bracket in 1954.

Raise the Calf and Clip a Coupon

Some definite suggestions on how to raise the kind of calves that build your herd . . .

Condensed from The Rural New-Yorker

H. A. Herman

THE growing of dairy calves is one of the most important phases of dairy farming. By raising, rather than purchasing, breeding stock a dairyman may bring about improvement in production by use of good purebred sires and by selecting heifers from only his best producing cows.

Growing one's own replacements also makes it possible to prevent introduction of contagious diseases such as tuberculosis, Brucellosis and mastitis into the herd.

Mortality among calves is appalling and many herds fail to progress, even though the best sires are used and a production testing program is followed, because the calf crop is lost to such an extent that adequate replacements from the best cows are never available. Some of the more important features of any calf raising program are:

Selection of Calves

Too many dairymen attempt to raise every calf. Many dams are inferior producers, and they should not be allowed to propagate their kind; it costs as much to raise a poor calf as a good one. A goal, with respect to the production of the dam and the predicted transmitting ability of the sire, should be established. Most practical breeders are finding the best way to cull dairy cattle is to dispose of poor cows and all their offspring.

It is true that occasionally some of these 150-200 pound butterfat producers are the mothers of satisfactory producing daughters, but the failures outnumber the successes, and it

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is folly to invest money and time against such odds. If the goal is a 400-pound-fat herd, the culling of calves from dams below that level is practical; and it must be vigorous.

Feeding the Dry Cow

The raising of thrifty calves really starts before they are born. The calf makes its greatest growth before birth, during the last two or three months of gestation. Cows should have a six to eight week dry period and must be fed so as to be in good body flesh at calving time.

The dry cow should be fed plenty of good quality, green leafy hay, as well as silage and enough grain feed to keep her in good thrifty condition. A varied diet for the pregnant cow is important. Cows forced to live on poor roughage with little green feed or grain in the diet often calve in thin condition and then produce poorly. In extreme cases of poor dam nutrition, calves are born with a low resistance to disease, because of a lack of sufficient vitamins in the diet.

It is a well known fact that low quality roughages are deficient in vitamin A and often in vitamin D. Green feeds like pasture and silage with minimum feeding of grain, however, may be depended upon to make up such deficiencies and special supplementary mineral or vitamin feeds are seldom needed.

Starting the Calf—Sanitation

In many herds, eight to 10 per cent of the calves die before they are a year old. Severe epidemics, particularly infectious (white) scours and peumonia, are more frequent and more disastrous in large herds than small. Many purebred dairy herds have difficulty raising enough replacements to keep the herd at optimum size.

Studies at several agricultural colleges reveal that 25 to 40 per cent of death losses occur the first week after birth and 40 to 65 per cent the first month. Only about 25 per cent of the deaths occur the second month, and for older calves the mortality is usually less than 10 per cent. Thus, about 80 per cent of the calf losses occur in the first 60 days of life. Scours and pneumonia account for the majority of the deaths. A sanitation and management program which has given good results in curbing these losses is as follows:

(1) Provide a clean, disinfected maternity pen with clean, fresh bedding for each cow at calving time. A 13 ounce can of lye dissolved in 10 gallons of water makes a good disinfectant for concrete floors; it should be applied after the floor

is scrubbed clean and before the bedding is put in place.

(2) As soon as the calf is born, paint its navel cord with tincture of iodine. This is a precaution against body infection.

(3) Before the calf nurses the first time, wash the cow's udder with warm water and soap; then rinse the udder off with clean warm water containing 250 parts of available chlorine per million. (Directions for making chlorine to strength are given on the container.) Wipe the udder dry with a clean cloth.

(4) Be sure the calf gets a good feed of colostrum or first milk. Colostrum contains antibodies which give the calf resistance against disease; it is rich in vitamin A or carotene and has a beneficial effect on the bowels.

(5) Leave the calf with the cow two or three days; otherwise keep the calf in a separate pen and permit it to nurse three times a day for the first three days. Wash and disinfect the dam's udder and teats each time the calf nurses.

(6) Do not overfeed. About one pound of milk for each 10 to 12 pounds of body weight per day is sufficient. An 80 pound calf should get about one gallon of milk (divided into three feedings) per day. Be sure the milk is warm, 95-98° F., at the feeding time. Overfeeding usually causes common scours.

(7) Keep feeding pails clean. Give them the same care and treatment as milk pails for Grade A production. Nipple pails are satisfactory and may prevent the calf's gulping the milk and reduce digestive troubles.

(8) Keep the calf in a draft-free, dry, well bedded pen. The use of slatted floors underneath the bedding helps insure dry pens.

(9) Do not overcrowd the calf quarters. Small individual pens are best and so are the small colony houses which hold only six to 10 calves in individual pens.

(10) At the first sign of scours or sickness move the ailing calf to separate quarters; clean up and disinfect the pens and put in clean bedding for the other calves in the building.

The use of sulfa drugs, penicillin and streptomycin has demonstrated their value in curing calf diseases—but prevention is still the best course to follow. The competent dairyman sees to it that his calves stay healthy.

A Feeding Program

There are few cases of thrifty normal growth where milk is not supplied the first few weeks of the calf's life.

Common calf raising methods are:

(A) Where whole-milk is sold, limited whole-milk and calf starter ration. Calves may be raised successfully by feeding whole-milk for a short time and labor is saved by feeding the dry mixture and there is not the necessity of having hot water at feeding time. There are no pails to wash after the first six weeks to two months, and the danger of spreading digestive troubles is lessened.

Under the plan, the calf is fed whole-milk for six to seven weeks. From the first week on the calf is induced to eat just as much concentrate mixture and leafy green hay as possible and the amount of whole-milk is cut down gradually.

Skim Milk, Grain and Roughage

(B) Use of skim milk—where cream is sold. Skim milk, when supplemented with a grain ration and plenty of good roughage, is the best feed for the calf up to six months of age. The change from whole milk to skim milk should usually be started when the calf is between two and three weeks old, depending upon the development and health of the individual.

The change from whole milk to skim milk should be gradual. One pound of skim milk may replace an equal amount of whole milk, the substitution being made at the rate of about one pound per day. As a rule the calf will be entirely on the skim milk ration by the time it is about one month of age.

Thereafter the amount of skim milk should be increased gradually until the calf is receiving about 10 to 14 pounds at two months of age; 12 to 16 pounds at three months of age; and most calves will take 16 pounds before they reach the age of four months, after which time the amount of milk should not be increased. A good quality, leafy, green hay (preferably a legume or mixed hay) should be kept before the calf at all times.

Homegrown Grain Supplement

When the calf begins to eat a little grain, consumption will average from one-half to one pound a day. The grain mix for the growing calf may be made up of homegrown grains supplemented with linseed or cottonseed meal. A typical grain mixture, utilizing feed stuffs usually available, consists of: ground yellow corn, 500 pounds; ground oats, 250 pounds; wheat bran, 200 pounds; linseed oil meal or soybean oil meal, 50 pounds; salt, 10 pounds.

(C) The use of nurse cows. Some dairymen, particularly those engaged in raising high class purebreds, prefer to use nurse cows to furnish whole milk during the first few weeks of the calf's life, and it generally results in sleeker, healthier calves. Troubles with scours, often caused by the calf gulping milk too fast, pot-bellied calves and contaminated feed pails are eliminated with this plan.

By the time the calf is two weeks old it should have access to good hay and a dry grain mixture. A suitable one is the following: Yellow corn meal, 20 pounds; ground or rolled oats, 20 pounds; wheat bran, 20 pounds; linseed oil meal, 20 pounds; skim milk powder, 20 pounds.

Feeding and Management of Young Stock

Heifers over six months of age are comparatively easy to care for but should not be neglected. At this age the heifer is growing rapidly and responds to good care and management by very economical gains in body size during this period. Studies at the Missouri Station show clearly that neglecting the feeding of calves between six to 12 months of age results in an increased growing cost. Heifers should not be kept fat but rather growing rapidly so as to be sufficiently developed to be bred for freshening at the normal age for the breed. The height at withers is a good index of growth.

From six months to one year of age the heifer may be fed mostly on roughages, including pasture, with a moderate amount of grain. During the Summer, green pastures furnish excellent and well balanced feed for growth. Unless the pasture is unusually good, however, a little grain feed is recommended, and this is most important for extremely young calves, six to nine months of age.

Roughage Requirements

Early in the Spring, during hot dry weather, and during the Fall when pastures are short, hay and silage in addition to grain should also be provided. Heifers from six to 12 months of age eat from five to 10 pounds of hay daily and from five to 15 pounds of silage, the silage replacing some of the hay. Legume hays such as alfalfa, clover, soybean and cowpea, or a mixture of these hays and non-legumes, is excellent for growing heifers. This form of roughage is rich in minerals and vitamins necessary for growth.

Where only non - legume

roughages—such as corn stover, timothy hay, straw—are available, a grain mixture containing 15 to 16 per cent protein should be fed.

In a series of experiments with Holstein and Jersey heifers, workers at the Missouri Station found that the average Holstein heifer grown at a normal rate from six to 24 months of age, on a maximum roughage and pasture utilization program, consumed 854 pounds of grain concentrates, 2,938 pounds of legume hay, 3,016 pounds of silage, and good pasture feed for 288 days. One group of heifers did not receive silage and required 1,232 pounds of grain, 4,818 pounds of legume hay and were on pasture for an average of 263 days.

Normal skeletal growth, as measured by height at the withers and chest circumference, was secured where approximately 55 per cent of the total protein and digestible nutrients were secured from pasture. It was clearly demonstrated that calves well fed to six months of age can be reared from six months to two years of age with an average grain requirement of not over 900 pounds where plenty of good roughage and pasture is available.

Milk Fever Strikes Top Cows

Watch for milk fever in cows that are freshening, particularly your top producers, advise Purdue University veterinarians.

Milk fever is usually associated with high producing families of cows and your most valuable cow is most likely to come down with the disease. Symptoms may appear right at freshening time, or a few hours before or after the calf is born.

Be suspicious if the cow becomes dull, is difficult to move, refuses to eat and drink, and starts to stagger. Constipation is a 100 per cent sure symptom, and oftentimes the cow's temperature goes below normal. Unless she's treated promptly, she will go down and be unable to get up.

Best advice for the dairyman is to call for veterinary help as soon as possible. With prompt treatment, chances for saving the cow are excellent.

Veterinarians give this final warning—if the cow goes down, be sure she isn't allowed to lie flat. There's danger of bloat, or a chance that the cow will regurgitate and choke, unless she is down with her legs under her, with head held normally.

Purdue University

Disease Kills the Japanese Beetle

An imported disease will reduce grub count 90% in one year . . .

Condensed from The Southern Planter

Dr. George S. Langford, UNIVERSITY OF MARYLAND

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ONE of the most momentous developments in all insect control history was the development of a process for treating land with a bacterial disease to destroy Japanese beetle grubs.

This one discovery has already saved the farmers in certain Japanese-beetle infested areas millions of dollars. Future savings to the farmers of America can probably never be evaluated.

A few years ago, in the Mid-Atlantic States, farmers and home owners alike had just about lost hope for relief from the hordes of Japanese beetles that came each summer and fed upon their fruit, ornamental, and farm crops. State and Federal entomologists were vexed at the failure of the then available insecticides to give adequate control.

A new insect had accidentally been introduced into America. It came without the natural enemies which kept it under control in its native Japan. In America it found food, climate and soil ideal for its development. It increased in unprecedented numbers, and was spreading to nearby areas.

Entomologists and farmers alike soon realized that if these enormous hordes of beetles were to be checked it would be necessary to find and establish natural enemies. A corps of scientists, operating under the guidance of the U. S. Bureau of Entomology and Plant Quarantine, was assigned this difficult task.

Through good fortune and hard work, a virulent disease that attacked and killed Japanese beetle grubs was discovered. And before long, a process was developed for formulating it into a spore dust that could be

Reprinted by permission from The Southern Planter, Richmond, Virginia

used to treat grub-infested grassland. It was named "milky disease" because it turned the blood of sick and dying grubs a milky white color.

Land is treated so that those Japanese beetle grubs that try to live in it, get sick and die. Entomologists are now stressing its use to bring the Japanese beetle under control. Many states are now spreading it as a public service.

How effective is the milky disease for fighting the Japanese beetle? There is no question about its effectiveness. Both USDA and state workers have proved its value. In Maryland where milky disease establishment has been emphasized, the results have been spectacular. Before milky disease was established, grub counts in certain grasslands ofter soared to 40 or more to the square foot. Now in these same areas the count averages less than 2 to the square foot. Generally speaking in heavily infested turf a treatment of milky disease will reduce the grub count over 90 per cent in a period of one year. But before the full impact of the disease on Japanese beetle populations can be felt in a community, it is necessary for all or most of the land area to become inoculated with disease.

Because of cost it is not practical for residents to treat all land in a community. Nature must be relied upon to help. And, if nature is to be used as an aid in the distribution, it is essential that the land be infested with grubs. That being so those living in newly infested areas must experience rather heavy beetle infestations before permanent relief can be had from milky disease.

Since it is not practical to treat all land in a community at once, users of milky disease should plan spot treatments on a community basis and then let nature spread it for them. Under these conditions it normally takes from 3 to 4 years for the full effects of the disease to be felt.

The Picture Changes—A broker who buys young calves at auctions recently stated that three years ago he paid $85.00 for a two day old beef type calf, while today he is able to buy similar animals at from ten to fifteen dollars. He takes these home and puts two of them on a nurse cow and reports he has had pretty good luck following this plan. As he looks back to the days when he was paying $85.00 per calf he wonders how he had the nerve to do it. *Northwestern "Ag" Letter*

LEASING PRACTICES

Results of a survey of Ohio farms. . .

Condensed from Ohio Farm and Home Research

H. R. Moore

FARM leasing has a definite place in agriculture. Over one third of our farm land is operated in this fashion, and apparently, in the majority of cases, the arrangements are satisfactory.

Rapid turnover of tenants, however, could be disastrous to both the land and the people. No matter what the arrangement may be, the goal of each instance should be more permanence of tenure through a fair division of expenses and income. Only in this way can each party maintain satisfactory relations.

With these ideas in mind, the agricultural economics department of the Experiment Station recently set up a project to report on the leasing practices found on a sample of Ohio farms. Information on specific leasing practices was assembled from over 400 replies to a mailed questionnaire to farmers in 19 Ohio counties. This was supplemented by a personal visit to approximately 150 farms.

About 60 percent or better of all Ohio farm operators have been classed as farm owners for the past 50 years. This means that the remaining 30 to 40 percent have consistently relied on some kind of contractural arrangement to obtain the use of land owned by others. A few of these arrangements, one percent or less, are farm manager salary or wage contracts; the remainder are leases.

During the 1940's the move toward part or full ownership speeded up because agriculture was unusually profitable, and the level of land values lagged behind the rise in the level of farm products prices. Lately, however, land values have been catching up and the capital requirements to own land now are high. These facts raise some pertinent questions—can the

Reprinted from Ohio Farm and Home Research, Columbus, Ohio

present low percentage of farm tenancy be maintained? Should the beginning farmer prepare himself to lease for a longer period before taking the step toward farm ownership?

Regardless of the trends or the particular contract agreed upon, the landowner and the operator alike have an interest in working out the terms of leases which will be fair to both, mutually profitable, and conducive to good farming.

Types of Leases

The two main types of leases are cash and share. Some agreements combine the two, or else vary the agreements in the share lease. Most frequently used in Ohio is the 50-50 livestock-share lease. General opinion favors its use because it tends to maintain the interest of both parties in the entire farm business.

A straight cash payment for the use of land is the least complicated method of leasing. Amount of the annual rental can be adjusted according to the productive capacity of the farm. Lands of low productivity are sometimes rented for cash because customary share rental terms are unprofitable to the operator. Likewise, he assumes all risk of operation and supplies all working capital.

Ordinarily, the cash tenant assumes the full right of use, occupancy, and management subject only to restrictions named in the lease. The owner's responsibility usually includes materials and labor for major building and fence repairs, insurance on buildings, real estate, and taxes.

Most share leases are the 50-50 or half-share type. With this arrangement, landlord and tenant agree to divide the physical product or income equally. Then through bargaining the two attempt to adjust the contributions so that each party will bear one-half the expenses. Because of this bargaining process, few of the leases studied adhered strictly to the rule of thumb terms of standard share lease. There are other types of share leases, but ordinarily the goal is to work up to the half share arrangement.

Division of Expenses

Under most share leases the landowner bore at least half the expense of liming material and trucking. Ninety-five percent of the cases reported use of fertilizer on crop land with the majority of landlords furnishing half.

Seed costs likewise were shared equally by the landowner and tenant. Sometimes the tenant furnishes the seed and

harvested the crop to offset the fertilizer purchased by the landlord.

In four out of five livestock-share leases the landlord paid one-half the machine expenses of harvesting small grains. Usually this was combining expense; occasionally, threshing. The same division of expense prevailed in only about two-thirds of crop share leases.

In this study, 60 percent of the landlords using livestock-share leases furnished no tractor fuel and 37 percent paid for half. Under crop-share, 99 percent furnished no tractor fuel. Some owners who pay part of the fuel bill prefer to make this a lump sum based on the estimated annual fuel cost on the leased farm. This avoids the complications of accounting for fuel used elsewhere or in reporting tax refunds.

Most farm lease arrangements provide for the tenant to supply all labor excepting that involved in maintenance or improvement of real estate, or in cases of highly specialized operations such as poultry or tobacco farms.

On many rented farms, building upkeep and repair are a heavy drain on the cash returns to the owner. If the tenant assumes the responsibility of supplying such labor, the arrangement more nearly approaches the situation existing on owner-operator farms.

Division of Income

In most share leases, the landlord receives half the harvested crops. Adjustments in leases seldom change this customary division of the product. Likewise, the sale of livestock products is generally on a 50-50 basis, the same as ownership. Of course, there are exceptions, but these usually apply in situations where the livestock represent minor sources of income.

According to this study, most of the two-fifths three-fifths share leases apparently exist in western Ohio. The principal characteristic of such a division is that the tenant bears all the expense for seed and harvesting and in return receives three-fifths of the crop. In case fertilizer is used, the tenant bears three-fifths of this expense.

The net result of this type of share is to shift a little more of the responsibility and risk to the tenant. If crop yields are above average, he stands to gain. If they are below average, the additional 10 percent of the crop may not pay for one-half of the seed and machinery expense of harvesting the landlord's share.

Testing a Lease

Testing the fairness of a

lease on a particular farm is primarily a problem of making an acceptable accounting of the contributions to this business by the owner and operator respectively. So far as possible, this ought to come from experience in operating a particular farm and from farm account records. Estimates may serve, but these should be subject to adjustment in the light of experience.

Both parties should also realize that when agriculture is unusually prosperous, a lease may be out of balance and still provide for the one on the short end of the deal a going rate of return on his contributions. The other party would get more than his share of the profits. However if expenses are correctly balanced, any pure profit in good years or loss in poor years will be shared equitably.

The basic assumptions are that a landowner should receive a fair rate of interest on the agricultural value of his real estate and that the tenant should receive a fair current wage for his labor. In addition, both should get paid an interest return on the capital value of their personal property use in the farm business.

At Least $2.20 For 1954 Wheat

Not less than $2.20 a bushel is the national average support price for 1954 wheat. This minimum support price announced by the U.S.D.A. is 90 per cent of the August 15, 1953 wheat parity price of $2.45. Support for 1953-crop wheat, now eligible for loan and purchase agreement, is a national average of $2.21 a bushel.

To be eligible for wheat price support in 1954, a producer must be in compliance with his 1954 wheat acreage allotment and all other 1954 allotments which have been or will be established for basic commodities in which he has an interest on the farm. He must obtain wheat marketing cards for all farms in the county on which he has an interest in the wheat crop.

A minimum support price is announced at this time in accordance with "forward pricing" provisions of the Agricultural Act of 1949. If the wheat parity price as of July 1, 1954 is higher, the support level will be increased to reflect 90 per cent of the wheat parity price at that time. In no event will the support be lower than the $2.20 national announced.

Arizona Farm News

Brush Patch to Seeded Field in One Day

Condensed from The Kentucky Farmer

Jim Claypool

THEY had a "working" recently in Campbell County, Kentucky on the Adam Schnorr Farm. It was sponsored by the Campbell County Soil Conservation District, so that every farmer in the county could see what could be done to a piece of poor, eroded, idle land.

Early on the morning of August 18, this spot was just another brush and gully infested field but there was a lot of noise. It sounded like heavy machinery at work.

At first, all that could be seen was an occasional crawler tractor which would shove its bright silver blade through the brush, then quickly withdraw like some giant monster afraid to show itself.

Later, the dull green of the brush began to be replaced by the dusty brown of the earth as it showed through. Then splashes of color—reds, yellows, greens, oranges and greys—began to show up as the farm tractors began to work the land with bush and bog harrows, farm disks, tillers and other ordinary tools.

Several times the whole area was momentarily hidden from view by an immense "smoke" screen of lime dust as a six-ton spreader truck made its rounds. Wheel tractors with distributors leaving "candy-like stripes" of fertilizer were in use, too. Three tons of limestone and one ton of 5-10-10 fertilizer equivalent were applied to each acre.

And then the seeders, some drill and some whirlwind type, covered the land with grass seed. Fifteen pounds of Fescue, ten of Brome Grass, five of Orchard Grass, five of Alfalfa, five of Alsike Clover were sown on each acre. Following the seeders

Reprinted by permission from The Kentucky Farmer, Louisville, Kentucky

were the cultipackers giving the land the appearance of having been covered with light brown corduroy.

When the last cultipacker pulled out of the field on to the highway, the sun was just sinking beyond the hill. In one day, almost fifteen acres of poor, eroded, idle land had become a smooth, well-fertilized, well-seeded field. All that was needed was rain and time, and there would be a productive grass field to show every one what men and machines could do for land.

It took men, more than a hundred, to plan the demonstration and to operate the equipment. There were five large crawler tractors with bush and bog harrows, sub-soilers, and dozer blades. There were four farm-type crawler tractors and twenty-four wheeled tractors on the job. There were more than a hundred different pieces of farm equipment in use during the day. All of the equipment was furnished by the farmers and the equipment dealers in the county. Some of the fertilizer and lime was also furnished in the same way.

The people all worked together to get the job done, Supervisors of the Soil Conservation District, Vocational Agriculture teachers, and County Agents in Campbell County. Even the young ladies, had an opportunity to show how they could fit into the picture. The Future Homemakers proved to the crowd that they were indeed homemakers of the future with their ham sandwiches, lemonade and home-made pies served at lunch.

More than two thousand people, including several from out-of-state, came by during the day, stopped a while, then went on their way. Thousands more will pass in the future and watch the results. What they like they will do on their own farms, a little slower perhaps, but the results will be the same.

Weather Favors Corn Borers—The notorious corn borer could give farmers considerably more trouble in 1954. It all depends on the weather, reports M. Curtis Wilson, Purdue University entomologist, who just helped complete the fall corn borer infestation survey in Indiana.

He says an unusually warm autumn favored borer development. Consequently, the insects are "healthy and fat," and in excellent condition to survive the rigors of winter. If blessed with an early spring, they could do serious damage to next year's corn crop.

CORN ROOTWORMS Can Be Controlled

A pound of insecticide added to the fertilizer can make a corn crop. . .

Condensed from Nebraska Farmer

Homer Fine

IF YOUR cornfields had that drouthy, low-yielding look this year, better check pretty close for corn rootworm damage. The drouth may have ranked second on the "damages" list.

Bushel yields in individual corn-fields in Nebraska this year were cut from 10 percent in light infestations to as high as 50 percent in heavier infestations. Entomologists at the University of Nebraska estimate that corn rootworms cut yields 20 percent across the state.

Some dryland fields made only fodder where corn rootworms and drouth conditions were both present. This was especially true in fields of second, third and fourth year corn.

Chemical control of corn rootworms paid big dividends for farmers in many areas this year. In fact, the application of one of the three insecticides recommended by the Nebraska College of Agriculture for rootworm control meant the difference between a decent corn crop or no corn crop for some farmers in areas of heavy rootworm infestations.

These chemicals, benzene hexachloride, aldrin and chlordane, take the place of the previous method of control that took a field out of corn for a couple of years to break the rootworm's life-cycle. And with the newer treatments, farmers should be able to grow continuous corn crops on land that will take it.

Fertilizer and irrigation combined didn't even produce a corn

Reprinted by permission from Nebraska Farmer, Lincoln, Nebraska

crop on untreated corn land for Robert Krug, who farms near Chapman in central Nebraska. But the field Krug treated with one of the recommended insecticides produced 60-bushel corn.

Krug wanted to see if chemical treatment would make any difference in corn rootworm damage on his farm. He treated part of one 10-acre field with aldrin, and planted it to corn for the third straight year.

The entire field was fertilized with 225 pounds of 15-15-0 to the acre and irrigated twice.

The difference between the treated and untreated corn on the Krug farm was amazing. Krug estimated that the treated part of the field made 60 bushels of good, sound corn to the acre. But the untreated corn, in spite of both fertilizer and irrigation, was hardly worth picking.

The only difference between the good corn and the poor corn was one pound of actual aldrin added to the fertilizer and broadcast on about four out of the ten acres in one field. Krug then disked the fertilizer and insecticide into the top three-to-six inches of soil before starting to plant corn.

Leslie F. Sheffield, secretary of the Nebraska Grain Improvement Association, pointed out that many fields in southeast Nebraska which appeared to have been hurt by dry weather actually were suffering mainly from corn rootworm damage. He advises farmers who have noticed spotty and sometimes large areas in their corn fields which appear sickly and lack both height and proper ear development to check for corn rootworms before blaming dry weather. In many cases, the damage may have been caused by rootworms and intensified by lack of moisture.

Look for lodged rows and "goose-neck" stalks that can be pulled up easily. These signs are a dead give-away that corn rootworms have been eating the root out from under your corn.

Of the three species of corn root-worms, the western corn rootworm (formerly called the Colorado corn rootworm) is generally most destructive in Nebraska cornfields, especially under continuous corn-cropping systems.

The adult western corn rootworm is a yellow and black striped beetle about a quarter of an inch long. It can be found from July until frost feeding upon pollen, silks and exposed kernels in cornfields plagued by the corn rootworm. The beetle lays eggs in the fall, which are deposited in the soil to remain over winter. These eggs hatch in the spring, and the resulting larvae work through the ground

until they come to the corn roots.

The larvae, in feeding, cut off a great number of the tender roots of the corn plant, which means that the plant is not able to absorb soil nutrients required to grow a healthy stalk, leaves, husks, silks and other plant parts, and still have food left to store as kernels of corn. The results of damage by the feeding larvae of the corn rootworm are three fold:

First, the holding power of the corn plant is greatly reduced as up to nine-tenths of the roots are cut by the worms. Comes a windy, rainy day, and the softening of the soil combined with the weakened root system lets the plant fall or blow over.

Of course, the corn plant will continued to grow toward the light of the sun, because there is the great power-source that runs the food factories in the corn leaves. The fallen plant bends toward the light, or upward, and as it continues growing, produces a "lodged" cornfield that defies man to see the rows or cornpickers to do a clean job of picking.

Second, since the larvae of the corn rootworm have cut a good many roots some two inches below groundlevel, the plants must depend on moisture in the surface soil to continue growth. This is where those hot, dry days of summer really hurt.

Third, yields are drastically reduced, since the plant doesn't have a surplus of food to store in the seed. During years of normal rainfall, corn rootworms are able to cut yields in half; during dry years, the field might produce only fodder or silage.

Of the remaining two species of corn rootworms, the northern species has a life history quite similar to the western corn rootworm; and the southern corn rootworm differs inasmuch as it lays eggs in the spring rather than fall, and is a serious menace to first year corn.

Recommended Insecticides

To control corn rootworms, entomologists recommend three chemical insecticides that can be applied either broadcast or as a row-spray treatment.

These are: as a broadcast treatment, BHC (benzene hexachloride) at from one-half to one pound per acre; aldrin at one pound per acre; or chlordane at two pounds per acre. As a row-spray treatment, the recommendations are: BHC at one-half pound per acre; aldrin at one-half pound per acre; or chlordane at one pound per acre.

All three insecticides have given good control of corn rootworms in tests made by the

college, both under broadcast and row-spray methods of application.

The row-spray method of application takes less insecticide, of course; but if the broadcast treatment is used, better coverage and a quicker kill is obtained. The spray can be applied at planting time through the use of nozzles attached to the planter for row-spray treatments, or sprayed broadcast and disked in immediately.

A powder or granulated form of insecticide can be mixed with fertilizer for application broadcast or with starter fertilizer for row treatment. Or farmers can obtain fertilizer-insecticide mixes already prepared.

One other insecticide has been giving good results, experimentally, in the control of corn rootworms. That is heptachlor, big brother to chlordane. This newest in the rootworm control line may be added to the "recommended" list after data on this year's trials are tabulated. Rate of application will probably be one-half pound of actual heptachlor per acre, to be applied at time of planting.

DDT and some other preparations under test have not proved satisfactory for control of corn rootworms.

But with three or four proven insecticides available next year, farmers will have a good opportunity to "go all out" against the root-eating pests.

Milk Surplus Could Be Wiped Out

The dairy industry could easily eliminate the nation's 1953 over-production of milk by getting the country's adult population to increase their milk consumption by one-fourth of a glass a day.

That's the opinion of J. A. Meiser of Michigan State College's dairy department. He points out that adults' consumption of milk is considerably below recommendations by nutritionists.

Latest statistics compiled by the U. S. Department of Agriculture show the per capita consumption of fluid milk by farm people to be about one pint a day—or 9 per cent of the total U. S. production.

Per capita consumption of fluid milk and cream for the urban population was approximately nine-tenths of a pint per day—or 40 per cent of the total production.

Michigan State College

Pamper The DRY Cow

How she is cared for before calving may determine how she will produce. . .

Condensed from The Dakota Farmer

Dr. J. W. Bailey

THE DRY COW is probably the most important animal on a dairy farm. She may be more important than a "fresh" cow, since the treatment she gets during the dry period, to a great extent, determines what kind of a producer she will be after calving.

A dry cow is much like a savings account in the bank. After she has freshened her owner can draw out only what he has deposited during the dry period. This is because proper care during this time increases body fat, replaces tissues worn out by the last lactation, restores surpluses of minerals, and builds up reserves of vitamins.

If she isn't properly cared for, the dry cow will have to draw on her remaining body reserves instead of building up new ones during her resting period. When this happens, any of the following four things can result:

1. Calves may be born weak, dead, or afflicted with "three-day-scours" because of vitamin A deficiency.

2. Milk production may be decreased because of a lack of calcium or phosphorus that is needed to make it.

3. Bones may be easily damaged or broken because excess amounts of calcium and phosphorous have been drawn from them.

4. Breeding troubles may result because of the generally rundown condition of recently fresh cows.

The length of the dry period is important. This isn't an exact matter of so many days, since it depends on the condition of the cow. Four to six weeks is generally about right, but this may not be enough for high producers that have milked very heavily in previous months.

Reprinted by permission from The Dakota Farmer, Fargo, North Dakota

Animals like this may need dry periods of 10 weeks or more to get themselves back in good condition.

Since you won't get top production from cows that freshen while they're thin, you'd better make sure that they get a little fat on their backs while they're dry.

Some owners dry off their cows in the wrong way. It doesn't make much difference how it's done as long as drying-off doesn't call for taking most of the food and water away. This procedure not only prevents fattening of cows, but it also makes it necessary for them to draw on precious reserves so they become even thinner. In some cases it may be desirable to take away a cow's grain for a few days, but she ought to have plenty of roughage and all the water she wants while being dried off, anyway. Grain feeding should be started again as soon as possible unless cows are on excellent pasture.

A practical winter ration is composed of well-colored legume hay, silage, and grain. The hay will provide essential minerals like calcium and phosphorus, together with vitamins A and D. The silage will provide additional nutrients and act as an appetizer at the same time. The type of roughage that's available will determine what the best grain mixture should be. When good legume hay is being fed as the only roughage, a half-and-half mixture of ground oats and corn or barley will probably be all right. When the legume hay is being fed with silage or corn fodder, some kind of a 12% protein grain ration is recommended. Poor quality roughage like prairie hay or straw calls for a 16% ration, with a suitable one being composed of equal parts bran, linseed meal, ground oats, and barley or corn.

The amount of grain needed also will depend on the condition of the cows. Those that were in good condition when dried off will be all right on two to four pounds of grain daily, while those that were extremely thin will probably need 10 or more pounds daily. In addition to the grain feeding, dry cows should have all the roughage they will eat without wasting it.

The proper feeding of dry cows doesn't end with providing grain and roughage, either, for all of them will need salt and most of them will require some extra minerals. The amount usually mixed with the grain ration won't be enough for many animals, so you'd better put out the salt and minerals

in weather-proof boxes on a "help-yourself" basis. It's best to supply these separately so cows can choose whichever they like. When salt alone is supplied. It should be of the trace-mineralized variety.

It is generally conceded that cows should gain weight all during their dry period, but still shouldn't be too fat at calving time. A popular "rule of thumb" calls for feeding a cow so she's about 100 pounds above her normal weight at freshening time. If properly fed and cared for during the first two months following calving, such a cow will then be able to produce more milk than her feeding intake alone will permit during this time. On the average this will amount to an extra 1,000 or 2,000 pounds of milk for the lactation period, so the owner will get his added feed costs back with interest. Not only that, but when it comes time to breed them back the cows will be in better condition so they have a chance to "settle" promptly.

If you'll follow the above recommendations, you can put your cows in box stalls at calving time with the satisfaction of knowing you've done your best to insure profitable lactations for all of them. Better treat those dry ones right, for the size of your next year's milk checks depends on how you do it.

Grazing Habits of Dairy Cows

Dairy animals were watched for several 24-hour periods. In a typical day and night, the cows spend over half their time, or 16 hours, standing. Over half (about 9 hours) of this standing time is spent grazing, the other 7 hours are spent "loafing." In their dawn-to-dawn watch, researchers also noted that the dairy cow spends about 1/3 of the time "chewing her cud," and about 1/3 of the time lying down.

The cows tended to graze most intensively and for longer periods of time upon reaching the pasture after the morning and evening milkings. They tended to "loaf" and lie down during the middle or hotter portions of the day and also for 2 or 3 hours after midnight. Usually the cows grazed for an hour or two just before midnight. As a rule they drank water upon reaching the pastures both morning and evening.

Virginia Polytechnic Institute

New Test To Determine Fertilizer Needs

Baking powder can tell you when to add phosphorus to your fields. . .

Condensed from The Western Farm Life

A NEW soil test to determine phosphate fertilizer needs has been developed at the Colorado A & M experiment station.

Rated by the scientists as reliable for use on calcareous soils, the test has the advantages of being quick and satisfactory for use on both alkaline and acid soils.

It's a chemical test that shows how much plant-available phosphorus a soil contains. Key to its success is the use of a solution of ordinary baking soda (sodium bicarbonate) to dissolve the phosphorus from a soil sample. Since the results of the test are closely correlated with plant uptake of phosphorus and the response to phosphorus reflected in increased yields, it enables scientists to predict how crops grown on a given soil are likely to respond to added phosphate.

This improved method of determining soil phosphorus is now available to the country's soil-testing laboratories, which check more than 1½ million soil samples a year to aid farmers in proper soil management. The sodium bicarbonate test can be made in less than an hour and is well suited for routine laboratory use. It is similar in principle to a potassium carbonate test which has been used for many years as a standard phosphates test in the soils research laboratory.

More dependable on a much wider range of soil types than previous methods, this new technique is especially valuable for testing the neutral and alkaline soils common in the West. Reliable determinations of available phosphorus in these soils were formerly difficult to make.

The solution of sodium bicarbonate ($NaHCO_3$) used in the test is adjusted to a pH (relative alkalinity) of 8.5. Choice of

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this particular solvent, which gives considerably better results on most soils than chemicals previously used, was based on recently acquired knowledge of how various formers of phosphorus react to each other in the soil, and how these reactions affect the amount of soil phosphorus plants can use.

* * *

The number of farm workers in the U.S. has decreased by two-million—one-sixth in the past twelve years. Farm output has gone up one-third, and labor output per man-hour has risen nearly one-half.

* * *

From the phosphorus extracted by the sodium bicarbonate solution, scientists can calculate, in pounds per acre, the quantity of phosphoric acid (P_2O_5) that is available to plants grown on the soil tested.

This tells whether adding phosphorus to the soil, in the form of fertilizer, will benefit the crop to be grown. Crops with small root-zone feeding areas, such as potatoes, require a higher concentration of nutrient phosphorus in the soil than crops, such as corn, which have roots that draw nutrients from a larger soil area.

During the past two years, the new test has been used to measure phosphorus fertility in more than 200 soils—ranging from strongly acid to alkaline—obtained from various parts of the United States.

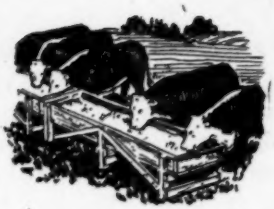
Extensive greenhouse and field trials show that results with this method agree closely with actual plant uptake of phosphorus from the soil and with yield responses of various crops to applied phosphates.

The test stands up well also when its results are compared with "A" values for soils. These are precise measurements of plant-available phosphorus obtained through use of radioisotopes. This complex analytical method serves to calibrate the easier-to-use chemical test for soil phosphorus.

Complete results of the comprehensive soil-testing program in which the sodium bicarbonate test was used are in process of publication. However, a preliminary report has been sent to soil-testing laboratories in all the states and several foreign countries, and many of them are now trying this technique.

With this new test for soil phosphorus, research has taken another step toward better understanding of farm soils and how to use them for more efficient crop production.

Weigh Sires and Calves To Make More Beef



Here are results of seven years of selective breeding at Haigler Hereford Farms. . .

Condensed from Breeder's Gazette

Robert C. Haigler

NOW that wide and comfortable margins have disappeared, cattle feeders are taking a renewed interest in more efficient production. Great strides have been made through research in developing efficient rations. But time after time we find a variation of only ¼ of a pound between individual cattle.

We have been breeding cattile at the Haigler Hereford Farms for 25 years; for the last 7 years we have been striving to increase the rate of gain by selection and breeding. From the results to date we believe that the goal of 1000-pound cattle in 12 months can be achieved.

Back in the '20's on 978 acres, which were typical cornbelt farms, we operated on a three-year rotation of corn, wheat and clover. Each fall we purchased 200 steer and heifer calves from the western range and marketed our corn through hogs and cattle. In those days everyone "knew" that you could not afford to raise calves on high priced cornbelt land. In 1928 we were feeding 100 heifers and by spring it turned out that about 15% of them were bred. I happened to mention this to L. P. McCann, who was Beef Cattle Extension Specialist for Ohio at the time. Mac was convinced that beef calves could be economically produced in Ohio and encouraged us to select some additional heifers from the feedlot for the beginning of a small commercial herd.

Our goal was merely to produce our own feeder calves. This we did for several years

Reprinted by permission from Breeder's Gazette, Spencer, Indiana

and proved to our own satisfaction that we could produce our own calves economically. Of course some said, and still do, that the range country can produce calves cheaper; to which we answer: yes, we believe they can, but will they?

As time went on we added a few purebred cows and gradually replaced the grades, until at the present time the herd consists of 150 registered cows and 6 herd sires. At least 85% of these cattle were raised on the farm.

In an effort to improve our cattle we purchased sires and heifers of the more popular bloodlines. The new blood enabled us to produce a larger percentage of calves that were short-legged, short-coupled and deep-bodied. This type was popular in the showring and it was pleasing to the eye of our customers; but after a few years, when a customer was asked how his bull turned out, the answer was, "Good, but he didn't get big enough."

Commercial breeders expected their sires to reach 2000 pounds at maturity and were disappointed when this new type only weighed 15 or 16 hundred. More and more often a man who wished to replace a bull that didn't come up to the weight he expected would ask if we had any sired by the old bull. The old bull, Prince Anxiety, was an extremely long bull and often weighed 2300 pounds in pasture condition. This bull was grandsire or great-grandsire of the bulls in the herd that are now making outstanding records in rate of gain.

Old Prince Anxiety was dead, but fortunately we were able to locate and bring back to the herd one of his sons. This son sired many of the outstanding cows now in the herd, including the mother of the most outstanding bull to date, H833.

While weighing calves we noticed that certain cows always produced slower gaining calves. In going over our records, we found that in almost every case these cows were sired by the same bull, and this bull was small, blocky and definitely of the type popular in the showring. We also noticed that certain other cows always had bigger, faster gaining calves. The cows in this group were big and most of them sired by the 2300-pound Prince Anxiety.

Now we began to wonder: if some bloodlines produced larger, more rapid gaining calves, perhaps by breeding and selection we could develop families that had these characteristics. And perhaps these in-

dividuals would transmit characteristics to their offspring.

In 1947 we weighed all our bull calves individually at weaning time—and at regular intervals during a feeding period of 150 days. These bulls were all fed in one feedlot on a ration of corn and cob meal, silage, hay, soybean meal, salt and mineral. In one group of 20 calves there was a difference of 180 pounds in weaning weight and 265 pounds in final weight. We noted the heaviest calf at weaning was also heaviest after 150 days' feed. It began to look as if we had found an easy way to select cattle. But we have concluded from records since 1947 that heavy weaning weight is desirable but is too greatly influenced by the cow's milking ability to accurately predict gaining ability in the feedlot.

In 1948 we also weighed our steer calves and came up with the following negative conclusions: No correlation between rate of gain and dressing percentage. Rate of gain could not be predicted by weaning weight.

From the records of the 1948 bulls we selected H833 as a herd sire because he consistently made good gains in the feedlot, and when turned on grass for 40 days gained 110 pounds, or 2.8 pounds per day. His dam always dropped superior calves.

Last winter we fed the second crop of calves sired by this bull and the results are rather amazing. The bull calves sired by H833 made an average daily gain of 2.67 pounds, while bull calves sired by six other sires made 2.43 pounds. His heifer calves gained at the rate of 2.14 pounds a day, while those of the other six sires trailed with 1.82 pounds per day.

With fat cattle selling at 25 cents a pound, an increase such as this, due to rapid gaining ability of selected breeding stock, amounts to an increased profit of $7.50 per head—or a decrease of feeding cost of 2.5 cents per pound, whichever way you would rather figure it.

In 1949 we began weighing all calves at birth, at weaning and every 30 days for the feeding period. This data was compiled on a sheet along with prices and given to our customers. This method of selling breeding stock has been well received and we have had many favorable comments from our buyers.

In 1950 we followed the same procedure including the heifers as well as the bulls. Beginning in 1951 we mailed postcards to all our customers just before the end of the feeding test stating when the calves would be for sale; and that none would

be sold until that day. By noon on the first day 25 head had been sold and all but two of our customers bought one or more cattle.

In this crop we had one calf dropped on April 6, 1951, that weighed 90 pounds at birth; he weaned December 8th at 725 pounds and on April 8, 1952, he weighed 1005 pounds. While this was the only calf to reach 1000 pounds in 365 days we had several between 900 and 1000 pounds. The total gain per calf for 154 days feed varied from a low of 225 pounds to a top of 420 pounds. This calf incidentally was sired by a bull that made the fastest gain during our test in 1947.

Our conclusions:

The mating of a large type cow to a small type bull often produces a good individual, but if this is continued the next generation is usually disappointing.

It is often stated that the bull is half the herd. But when you consider an individual animal, more than 50% of its characteristics come from the dam, because of temperament and milking ability.

The selection of small type increases the chance of selecting a runt.

The continued use of nurse cows can result in strains that cannot raise their own calves.

* * *

America switched last year from a "pork" to a "beef" eating country. Per capita beef consumption was expected to increase from 61.2 pounds in 1952 to 74 pounds in 1953, while per capita pork consumption is expected to decrease from 71.6 pounds to 60.5(with the overall meat consumption about 128 pounds.

* * *

Showring type is not necessarily a profitable type for feeders.

A long nose is not a sure sign of a poor gainer. (I still like to look at a short nose though.)

Birth wt. of 75 to 90 lbs. is desirable.

Short coupling means less steak.

The ability to make rapid gains is inherited.

1000-pound steers in 12 months will be produced.

Results of 1952 Production Test

	Calves *Sire H833	Calves by 6 Other Sires
	10 Bulls	32 Bulls
Total gain per calf in 120 days	321 lbs.	292 lbs.
Average per calf per day	2.67 lbs.	2.43 lbs.
	6 Heifers	40 Heifers
Total gain per calf in 120 days	257 lbs.	219 lbs.
Average per calf per day	2.14 lbs.	1.82 lbs.

Paying Producers for FAT and SOLIDS-NOT-FAT in Milk

New pricing system now used in half of Wisconsin's manufactured milk plants attempts to pay for ALL the food value in milk . . . gives low test herds a better break.

Condensed from Wisconsin Circular 449

R. K. Froker and C. M. Hardin

PRICING milk on the basis of both fat and nonfat solids has taken on new significance during the past decade with greater nutritional and economic importance of nonfat milk solids and less demand for milk fat.

Most dairymen agree that the price each farmer gets for his milk should be based on what the dairy plant or handler is able to realize from it or from the products it yields. Since both fat and solids-not-fat contribute to the value of the milk, both should be considered in pricing it.

This is a brief summary, using current examples, of the pricing plan developed by R. K. Froker and C. M. Hardin of the University of Wisconsin.

Essentials of Sound Pricing

The pricing plan outlined in this report was developed at the request of a number of farmers who wanted a pricing method fair and equitable to all breeds and to the range of tests within each breed.

These dairymen and other dairy leaders agreed that a sound pricing plan must take into account:

1. Both the fat and solids-not-fat content of the milk, for these are the food elements we are pricing.
2. The market value of units of these milk solids when

Reprinted from Circular 449, May 1953, University of Wisconsin, Madison, Wisconsin

sold or used for specific purposes.

3. The costs or charges which should properly be deducted from these values. Some costs vary directly with the volume of the milk regardless of the test. Other costs such as packages for butter and cheese are in proportion to the fat and nonfat solids content of the milk.
4. The need for sharing equitably among producers of high and low test milk the premiums realized in selling to fluid markets and in making specialty products.
5. The desirability of having one basic pricing plan adaptable to the entire industry—fluid milk, butter, cheese, evaporated milk, cream, powder, ice cream and other products, or a combination of them—with enough flexibility to permit full consideration of differences in costs and prices among plants and markets.
6. Simplicity in calculation of producer payrolls and in reporting prices to patrons.

Paying for milk on a straight butterfat basis does not meet all the essentials of a good pricing plan since this assumes that the solids-not-fat increase at the same rate as fat content does. Actually this is not true. The solids-not-fat increase as the test of milk increases—but much less rapidly. This means that the yield of dairy products *per pound of fat* actually decreases as the test goes up.

The plan described here was designed to recognize these requirements. It takes into account the fat and solids-not-fat content of the milk, the market value of their products, and the costs or charges in processing and marketing these products. It is also adaptable to all types of dairy products, of dairy plants and of milk markets.

Under this plan the market proceeds of a plant or market are distributed in such a way that each producer shares on the basis of his actual deliveries of fat and solids-not-fat, with due consideration of costs, prices, and premiums.

To apply this payment plan it is necessary to:

1. Determine a price per cwt. of milk for a given test.
2. Determine a price differential for each change of 0.1 of a pound of fat solids and each 0.04 of a pound of solids-not-fat.
3. With the cwt. price and this differential, set up a

schedule of prices for milk of all tests.

4. Where premiums are involved, as in fluid milk markets and in the sale of specialty products, include these in the cwt. price and in the differential to prorate premiums over all tests of milk.

The Hundredweight Price

In establishing the initial cwt. price, the value of both fat and solids-not-fat should be taken into account. This is done automatically when the price is established on a pooled basis. Under pooling operations the total net proceeds from all sources (after deducting the expenses and normal reserves) are divided by the cwts. of milk handled. Thus we get the price per cwt, for the average test by the formula:

NET DOLLARS DIVIDED BY CWT. MILK EQUALS PRICE

For example, if a plant handled 3,000,000 pounds with an average test of 3.8% fat, and had $109,200 proceeds to return to patrons for this milk, the price for the average test would be:

$109,200 DIVIDED BY $30,000.00 EQUALS $3.64

Pooling is the method most commonly used in Wisconsin, but the initial price per cwt. of milk might instead represent:

1. A price set in bargaining between an association of producers and handlers.
2. The competitive price required to attract milk to the plant.
3. A price determined by some previously agreed upon formula, as illustrated in the operations of markets having fluid milk orders.

Understanding the Differential

The key point in milk consumption, and one on which there is fairly general agreement, is that for each 0.1% change in the fat content of milk there is corresponding change of approximately 0.04% in nonfat solids. Hence the price differential is the net value to the plant of 0.1 of a pound of fat and 0.04 of a pound of solids-not-fat.

Several tests have been worked out for nonfat solids, but none is in general use in buying milk from individual producers. However, the table of average or normal relationships between

fat and solids-not-fat in milk has proved quite dependable on a herd basis and over a period of time.

Fat test Per cent	Pounds of solids-not-fat	Pounds of total solids	Pounds of solids-not-fat per pound of fat
3.0	8.27	11.27	2.76
3.5	8.47	11.97	2.42
4.0	8.67	12.67	2.17
4.5	8.87	13.37	1.97
5.0	9.07	14.07	1.81
5.5	9.27	14.77	1.69
6.0	9.47	15.47	1.58

(Jacobson, Moses S., Journal of Dairy Science, Volume XIX, 1936, p. 174)

Figuring the Differential

The determination of the price differential is easiest to explain when the fat and solids-not-fat are used and marketed separately, as is the case when butter and nonfat powder are made from the milk.

Here is an example to show the steps in determining the value of one-tenth of a pound of butterfat made into butter:

Price received for butter	65.0c a pound
Less the direct or product costs*	−3.5c
Net value of one pound of butter	61.5c
Times the pounds of butter made from 0.1 of a pound of butterfat	0.121
Net value of 0.1 of a pound of butterfat	7.442c

Now, since on the average 0.1 of a pound of butterfat is associated with 0.04 of a pound of solids-not-fat, we make a similar calculation to get the value of 0.04 of a pound of solids-not-fat made into powder or nonfat dry milk solids:

Price of powder	16.0c a pound
Less the direct or product costs*	4.0c
Net value of one pound of powder	12.0c
Times pounds of powder made from 0.04 of a pound of solids-not-fat	0.041
Net value of 0.04 pounds solids-not-fat	0.492c

*Direct or product costs include the handling of the butter, the packaging, marketing, and its share of the general overhead. They do not include assembling and receiving costs. By this simple means a division is made between costs affected only by the volume of milk and those influenced by the test or composition of milk. If direct costs are estimated within a half cent per pound of butter the final differential will be within 0.1 cent.

The combined value of the butter - powder differential is made up as follows:

	Butter	Powder
Price per pound	65.0c	16.0c
Less direct or product costs	—3.5c	—4.0c
Net value	61.5c	12.0c
Times yield	0.121	0.041
	7.442c	0.492c
Differential (combined value rounded to nearest tenth of a cent)	7.934	
	7.9c	

The differential, then, is the net value of 0.1 of a pound of butterfat *and* 0.04 of a pound of solids-not-fat, or, in the example just given (based on early 1953 butter and powder prices) 7.442 cents for the fat and 0.492 cents for the solids-not-fat—a total of 7.934 cents. (In practice, these differentials should be rounded out to the nearest tenth of a cent, making the differential 7.9 cents in this example.)

The Schedule of Prices

At this point, starting with a cwt. price of $3.64 for milk testing 3.8%, we are ready to set up the schedule of prices for the entire range of tests. This is done by simply adding or subtracting the differential as the tests go up or down.

Test	Price
3.0	$3.008
3.1	3.087
3.2	3.166
3.3	3.245
3.4	3.324
3.5	3.403
3.6	3.482
3.7	3.561
3.8	3.64
3.9	3.719
4.0	3.798
4.1	3.877

In paying a producer, one simply multiplies the cwts. of milk by the price for his test to determine the total amount due him. It is not necessary to determine the pounds of fat or solids-not-fat per patron. For example:

Producer A delivers 8670 pounds of milk, test 3.3%
8670 x $3.245 = $281.34

Producer B delivers 9820 pounds of milk, test 3.8%
9820 x $3.64 = $357.45

In fluid milk markets and for plants with special market outlets, producers are often paid a premium over and above the value of the milk for manufacturing purposes. In such cases it is important that the premium be applied proportionately to the fat and solids-not-fat content at all tests of milk. This can readily be done by applying the premium to the differential as well as to the basic hundredweight price. For example, suppose that 3.5% milk is worth $3.40 for manufacturing purposes with a differential of 8.0 cents. If the pool price

for 3.5% milk in the fluid milk market is $4.08, a 20% premium is being paid. By raising the differential 20% (from 8.0 to 9.6 cents), this premium is effectively prorated over all tests of milk. This makes the hundredweight price for each test of milk in the fluid milk market 20% above that for milk of the same test for manufacturing purposes.

For Other Market Situations. In figuring the differential for such combinations of products as butter and casein, cream and nonfat dry milk powder, cream and casein, or the various types of cheeses, we again must determine the net value of products obtained from 0.1 of a pound of fat and 0.04 of a pound of solids-not-fat. Yield factors will, of course, be different from examples given earlier, but the procedure will be the same.

Some Questions and Answers

This plan assumes that as the fat goes up 0.1% (for instance from 3.5% to 3.6%) the solids-not-fat go up 0.04% (from 8.47% to 8.51%). Is this an accurate assumption, and does this 0.1 to 0.04 relationship exist at all tests?

This assumption is supported by the work of Moses S. Jacobson, who reported on analyses of 150,000 samples of milk. He found considerable variation from cow to cow and from day to day, but these differences tended to cancel out on a herd basis over longer periods. Furthermore, he found no important difference between the change in fat and solids-not-fat at high and low tests. In other words, as the test went from 5.5% to 5.6% the solids-not-fat increased by 0.04%, the same increase in solids-not-fat which occurs when the test goes from 3.5% to 3.6%. Jacobson's study is generally regarded as among the most reliable and extensive ever made.

Isn't this plan too complicated for the average dairy plant?

Plants which have adopted the plan are actually amazed at how easy it is to use. Normally no additional time is required to figure the payroll under the new plan than under the old butterfat plan, because it is no longer necessary to figure pounds of fat per patron. The pounds of milk for each patron are simply multiplied by the price for his test of milk to determine the total value.

Is this plan fair to both high and low testing herds?

Yes. It is designed to pay

producers the full market value of their milk regardless of test. Where the straight fat method of payment is still in use, a change will mean a somewhat lower price for the highest-testing milk. On the other hand, many markets, and especially some of our fluid milk markets, are now *underpaying* the high-test producer.

A comparison of the fat-SNF payment plan with the straight fat method is as follows for a creamery with an average test of 3.8% and the prices and costs presented earlier:

	Price Per CWT	
% Fat	Fat & SNF	St. Fat
3.0	$3.008	$2.874
3.5	3.403	3.353
3.8 (Ave. test)	3.640	3.640
4.0	3.798	3.832
4.5	4.193	4.311
5.0	4.588	4.789

Does this plan make it desirable for farmers to shift from high to low testing herds?

Market conditions in recent years and especially in recent months have placed a relatively lower value on fat and relatively higher value on solids-not-fat. This change tends to favor lower testing milk within each breed and between breeds as compared with earlier conditions. However, the change in favor of lower testing milk is not as pronounced as most people believe.

At prices prevailing in manufacturing areas early in 1953 a 4.5% milk would have averaged about 80 cents more per hundredweight than 3.5% milk, and 5% milk another 40 cents higher. In fluid or premium markets that difference in price would have been even greater.

The major opportunity to increase profits is to increase the efficiency of the cow. The differences in profitability between "good" and "poor" animals within a breed are much greater than those between good animals (or poor animals) of different breeds.

Will this plan encourage the removal of some of the cream from high testing milk to be sold separately from the remaining milk?

No. Actually the result will be a loss to the farmer. He could not market the fat as farm-separated cream as profitably as in milk, and with a lower-testing milk he would be paid less for the skim milk portion.

How can a plant hold patrons who deliver high testing milk when its competitors pay on a straight butterfat basis?

The plant has at least as much chance of attracting patrons with low testing milk as of losing high test herds. If a com-

petitor takes patrons with high testing milk, he takes proportionately more fat than solids-not-fat and consequently sooner or later must lower his price per pound of fat. This further weakens his position with respect to low test milk.

* * *

Interest in dwarf apple trees is on the increase. High costs of labor and the demand of consumers for ever-higher quality fruit has stimulated the interest of growers in dwarf trees. The trees can be sprayed, thinned, pruned and harvested economically.

* * *

Are very many plants using this plan?

Some dairy plants in Wisconsin have been using this price plan for over 10 years. It was estimated early in 1953 that 50% of the Wisconsin plants buying milk for manufacture were using the plan, and the number of plants using it was increasing rapidly.

Can this plan be used for the entire dairy industry?

Yes. It is readily adaptable to all types of dairy products, dairy plants, and milk markets.

Can the payroll be checked under this plan?

Yes. If accurate calculations have been made, the sum of the payments to all farmers will equal the total amount available for distribution to the farmers. The prices and cost figures should, however, be carried to the nearest tenth of a cent and the computations to the nearest hundredth of a cent to insure accuracy.

Do dairymen understand the plan?

In plants where it has been adopted dairymen have not experienced any difficulty in understanding this plan. Many have actually commented on its simplicity of operation after having heard it explained.

What kind of report is made to the producer under this plan?

The farmer's pay statement usually shows the pounds and test of milk he has delivered, the price per cwt. for his test of milk, and the total value of his milk. It is also desirable to show the plant price per 100 pounds of milk testing 3.5% fat, and the price differential.

* * *

U.S. food crops are grown on about 300,000,000 acres of land. This is about 100,000,000 acres more than 40 years ago.

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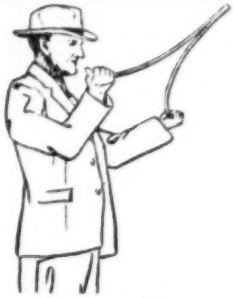

The Forked Stick Still Finds Water

The gentle art of dowsing has been under fire for centuries . . . but whether you swear at it or by it, evidence shows it finds water. In fact, hard-headed Western ranchers and stockmen are willing to pay $25 to $300 for a dowser's services.

Just why one person in an estimated 25,000 should have the unusual ability to be a good dowser and locate underground water with a forked stick or steel rod is anybody's guess. Recently, a scientist discovered, by surprise, that he could dowse and has begun a series of experiments. Perhaps he can determine whether it is science or humbug.

In the Southwest, there are now ten or more recognized dowsers. Vern Cameron is reported to have dowsed a well at Fern Valley, Cal. He told town officials to drill 254 feet, that water would rise to 30 feet of the surface and, when pumped, a spring up canyon would cease to flow. He errored only in that water rose within 28 feet of the surface.

Jerry Smith, district manager for a power company, is said to have dowsed more than 300 water wells without a failure. His fame soared when he located two 3000 gallon-per-minute wells right among several dry holes and small output wells. In these days of deep wells and irrigation projects, water is big business and finding it is worth real money.

Based on an article in Western Livestock Journal.